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By

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Dietary Patterns and Food Habits

MARGARET MEAD, Ph.D.

Dr. Mead is Executive Secretary of the Committee on Food Habits of the National Research Council. This is a wartime appointment; Dr. Mead is on leave of absence from the American Museum of Natural History where she is Associate Curator of Anthropology. In this article, read before the American Dietetic Association, Detroit, October 19, she has drawn upon the materials prepared for the Committee, but this article does not constitute an official report of Committee activities. Dr. Mead holds a master's degree in psychology and a doctor's degree in anthropology. She has made several expeditions to study primitive peoples. Among her published books are "Coming of Age in Samoa," "Growing Up in New Guinea," "Changing Culture of an Indian Tribe," and "Sex and Temperament in Three Primitive Societies"; and the recently published, "And Keep Your Powder Dry," and "Balinese Character," of which her husband, Gregory Bateson, the British anthropologist, is co-author.

AS PROBLEMS of nutrition take an increasingly important place in the foreground of our attention, we find that the same process is going on in nutrition and dietetics as in every other focal point of our social life—an attempt to cross-fertilize the thinking of the different specialized disciplines by a systematic interchange of techniques and insights. During the last fifty years a large number of disciplines dealing with human behavior have grown up, each behind its own high walls, with a tendency to think of itself as not only having a point of view, and a series of techniques, but also a set of data which belong to it alone. A familiar illustration is the economist, who has tended to regard certain phenomena as economic data and human beings in terms of an abstraction called "economic man." I imagine that it is in response to this revaluation of the procedures of all of the sciences which deal with human behavior that I have been asked to speak today on the contribution which a committee drawn mainly from the field of anthropology can make to the problems of dietitians in this wartime situation.

The first contribution which anthropologists, sociologists, and social psychologists can make, working within the frame of reference of comparative culture, is to provide cultural self-consciousness, to place any set of activities within our society against the backdrop of a systematic knowledge of many other cultures, and so to identify those parts of our thinking which appear to us to be "logical" or "matters of everyday knowledge" or "human nature," but which are actually a reflection of our own historical tradition. By such an approach, any given profession may be placed in a scientific context in which the emphasis is not upon what the profession does, or upon what function it has seen itself as serving, but upon its place in a total cultural picture. Thus we get two quite different answers when we ask: What is a dietitian? depending upon whether our frame of reference is "as over against a nutritionist, a home economist, a food economist, etc.," or whether we wish to place the dietitian in a historical context which includes the seers and magical specialists of remote primitive times, religious functionaries of medieval times, and the experts of the future who will be more highly specialized, more highly skilled than the present-day dietitians and who will plan for the diet of whole nations and the whole world.

The second contribution that such an approach can make is to give a knowledge of the cultural dynamics which underlie our present acceptance or rejection of certain dietary practices—as a people. By identifying the peculiar culturally standardized attitudes which have been built into us, as members of the American cultural group, it will be possible to develop a dietary pattern of greater durability than is the case when the dietitian has to operate on an intuitive, trial and error basis. As I understand the present practice of dietetics, there are two major emphases which involve the changing[1] of human behavior: first, institutional practices through which large numbers of people come to accept and follow dietary practices hitherto unknown or unaccepted by them; and second, work with individual patients

[1] For an analysis of the different types of change in food habits, *see* Mead, Margaret: The factor of food habits. The Annals of the American Academy of Political Social Science. Volume on Food and Nutrition (in press).

whose individual habits must be modified in conformity with medical prescriptions.[2] At the institutional level, dietitians have had to operate with what may be called "mass psychological techniques"; and at the individual level, with the most searching findings of psychiatry. So the dietitian who alters the order of foods in a cafeteria, placing the salads before the desserts, so that more people will eat more salads, or who offers the same food in two alternative forms so as to increase the consumption of that food, is constructing an institutional pattern through which preferred nutritional choices will be made painlessly, in which the individual does not consciously participate, but in which the results are strictly predictable. To attain results of this sort, it is not necessary to know anything about the individuals who pass down the cafeteria line, and when individuals have passed through the line for months, they will find themselves eating foods formerly avoided with no knowledge of what has transpired.

THE DIETITIAN'S CONTRIBUTION

To the extent that the dietitian is the skilled manipulator of social patterns creating situations within which good dietary practices are learned and established, the dietitian may be said to be using highly sophisticated social techniques. If she phrases her task as, How can I create new patterns of behavior in line with our best scientific knowledge? she is asking a social engineering question. Such a dietitian feels that whether the institution group under her care eat a balanced or unbalanced meal, is her responsibility and not theirs. If they fail to eat correctly, she has failed in her job of presenting to them a food situation in which they can do nothing else. The success of such dietetic practice might suggest that it is only a matter of time until the American dietary pattern approximates scientific requirements very closely.

But such an optimistic outlook would overlook the fact that the majority of Americans do not eat in institutions and that only under exceptional circumstances, such as the present war, do enough Americans eat in the same institution long enough to adopt automatically the patterns which the dietitians of those institutions set up. When dietitians are confronted, in the food clinic, with outpatients whose diets must be altered, they meet, in a vivid form, the other side of the picture: the apparent intractability of "food habits" as practiced in the home, both by the homemakers and by those who eat the food the homemakers set before them. Once the dietitians set themselves the larger task of establishing for the whole of the American people a dietary pattern of maximum nutritional value, they then have other patterns to change—the patterns of home food habits which are in as much need of skilled attention as are the cafeterias of hospitals, industries and training camps—if any permanent results are to be obtained. The individuals who pass through a cafeteria line or eat day after day at the same table, may be controlled while they are there, may be manipulated by discreet alterations in price, by emphasis upon choice rather than upon what is being chosen, by changes in the order of arrangement of foods, or different bulkiness or taste value or color appeal; but as long as there are other forces at work inside their personalities which place definite positive and negative values on foods of different sorts, these lessons learned so painlessly and taught so skilfully will not endure.

DYNAMICS OF AMERICAN DIETARY PATTERN

It is for this reason that it is necessary to discuss the dietary pattern of the American people, not only in order that skilled institutional management or equally skilled individual therapy may construct conditions under which that dietary behavior will alter, but also to discover the obstacles to the continuation of the habits learned in these conditions. It is to this problem that research has been directed in recent months, using the techniques of comparative anthropology. The way in which attitudes toward food are instilled into American children may be systematically compared with the inculcation of comparable attitudes in other cultures.[3] Under the direction of Professor Kurt Lewin,[4] experimental psychology techniques have been used and various types of tests devised which can be used to explore further the existing research findings. These various investigations have high-lighted a situation which is so commonplace to all of us, and especially to those who have specialized in questions involving attitudes toward food, that at first sight it will not seem to be a discovery at all: that resistances and acceptances of food are thought of in terms of morality. People feel that they ought to eat correctly, or, less abstractly ("it's wrong to eat too much sweet stuff"), that, in fact, foods that are good for you are not good to eat, and foods that are good to eat are not good for you. So ingrained is this attitude that it may

[2] As described in Stern, F.: The nutritionist looks at mental hygiene. Ment. Hyg. 14: 54, 1930.

[3] For such comparative studies, *see* Richards, Audrey I.: Hunger and Work in a Savage Tribe; A Functional Study of Nutrition Among Southern Bantu. London: Routledge, 1932. Also, Mead, Margaret: How the Papuan plans his dinner. Natural History 34: 377, 1934; and Gorer, Geoffrey: Himalayan Village. London: Michael Joseph, 1938.

[4] Professor Lewin has conducted a large series of experiments and explorations into attitudes toward food. Two of his reports on this work are now available in mimeographed form; namely, "A Group Test for Determining the Anchorage Points of Food Habits" and "The Relative Effectiveness of a Lecture Method and a Method of Group Decision for Changing Food Habits," Committee on Food Habits, National Research Council, 2101 Constitution Avenue, Washington, D. C.

come as a surprise to learn that in many cultures there is no such contrast, that the foods which are thought to make people strong and well are also exclusively the foods which they like to eat, which they boast of eating, and without which they would be most unhappy.

The whole problem of food habits, in the past, has been variously discussed as a phenomenon of "habit formation" on the loose general basis that any habit once formed is hard to break, that "early habits" are hard to break, that Americans have learned bad foods habits and therefore it is difficult to teach them good ones. The assumption has been that food habits were just like any other kind of habit and very little attention has been given to the particular way in which they were engrained.

Yet all those dietitians who are familiar with the findings of psychosomatic medicine will recognize that food habits are not merely significant to an individual because they are his habits, but that in his own experience, accepting or rejecting food, overstuffing or refusing food, gives food a special role. Whether we turn to the studies on gastro-intestinal diseases which have been conducted by Alexander and his group,[5] or to the studies of the family frame of obese children,[6] or to the investigations of anorexia nervosa,[7] or the background of asthma,[8] we find a plot in which food, its intake or rejection, plays a special part. Now these extreme cases which are familiar to the dietitian working in a food clinic, are exaggerations of types of character structure which may also be generalized[9] and become the typical and standard behavior for a whole group of people. So we find national groups who have great difficulty in adjusting to new foods, like the Italians,[10] who associate food with a strongly indulgent, warm, all-giving mother. The food eaten in pleasant childhood surroundings becomes a symbol of those surroundings and when, even as an adult, an individual so reared is deprived of this familiar food, his sense of deprivation is disproportionately great. Among various primitive peoples whose whole culturally standardized character patterns have been studied, we again find generalizations of the types found in the clinic; such as cultures in which all services, even between brother or sister, are measured out and paid for (*e.g.* the Manus[11]) and in which the people display corresponding gastro-intestinal tendencies, and other cultures (*e.g.* the Arapesh[12]) in which all human relationships are phrased in terms of food. If you were to set out in a row all of the most vivid types of food behavior with which the food clinic is confronted, it would be possible from comparative cultural studies to match most of them and to show how the mechanisms, presented in a pathological form by individuals, have become through generations the standard practice of groups of people.

In order then to be able to make a permanent impression on the dietary habits of Americans, it is necessary to know the plot of the life of the American child who is learning to eat, what attitudes he builds up toward his food, what part of his personality is most deeply involved. Here we find that an attitude far older than the science of nutrition is still holding sway in the home, in fact an attitude which is inimical to all that we know about permanently establishing new patterns of behavior. Each generation of children is taught that bad food habits are a possibility against which they must be continually on guard. That is, traditionally, we have tried to make the correct consumption of foods an act of repetitive personal choice, instead of a semi-automatic behavior such as the skilful dietitian promotes in the institution. In the average home, the right food and the wrong food are both placed on the table; the child is rewarded for eating the "right" food and so taught that the right food is undesirable—for parents do not reward children for doing pleasant things. At the same time children are punished by having the "wrong" food taken away from them; here again the lesson is taught to the child that that which is delicious is an indulgence—for which one is punished or with which one can be rewarded. A dichotomy is set up in the child's mind between those foods which are approved and regarded by adults as undelicious and those foods which are disapproved but recognized as delightful. A permanent conflict situation is established which will pursue that child through his life—each nutritionally desirable choice is made with a sigh or rejected with a sense of guilt;

[5] Alexander, Franz: The influence of psychologic factors upon gastro-intestinal disturbances: A symposium. A report upon research carried on at the University of Chicago Institute for Psychoanalysis. I. General principles, objectives, and preliminary results. Summarized in Psychosom. Med., 1: 429, 1939.

[6] Bruch, Hilde, and Touraine, Grace: Obesity in childhood. V. The family frame of obese children. Psychosom. Med. 2: 141, 1940.

[7] Rahman, Lincoln, Richardson, Henry B., and Ripley, Herbert S.: Anorexia nervosa with psychiatric observations. Psychosom. Med. 1: 335, 1939; also Waller, John V., Kaufman, Ralph M., and Deutsch, Felix: Anorexia nervosa, a psychosomatic entity. Psychosom. Med. Vol. 2, No. 1, 1940.

[8] Deutsch, Felix: The choice of organ in organ neurosis. Internat. J. Psycho-Analysis, Vol. 20, Nos. 3 and 4, 1939.

[9] For systematic statements of the way in which cultural patterns may approximate the behavior observed in our society, *see* Benedict, Ruth: Patterns of Culture, Chapter 8. Boston and New York: Houghton, Mifflin and Co., 1934; also Bateson, Gregory: Naven, Chapter 8. Cambridge (England): Cambridge University Press, 1936.

[10] Nizzardini, Genoeffa, and Joffe, Natalie F.: Italian Food Patterns and Their Relationship to Wartime Problems of Food and Nutrition. Committee on Food Habits, National Research Council, Washington, D. C.

[11] Mead, Margaret: Kinship in the Admiralty Islands. Anthropological Papers of the American Museum of Natural History. Part II. 31: 183–358, 1934.

[12] Mead, Margaret: Sex and Temperament in Three Primitive Societies. New York: William Morrow, 1935.

each choice made in terms of sheer pleasure is either accepted with guilt or rejected with a sense of puritanical self-righteousness. Every meal becomes an experience in which an individual must decide between doing right or enjoying himself. Furthermore, as doing right is closely associated with parental supervision, a secondary association is made linking autonomy, adulthood and masculinity with eating what one likes instead of what mother approved of.

This situation is an eternally self-defeating one, for as long as materials for making the wrong food choice are as accessible as those for making the right, many individuals will make the wrong choice, fairly often. As long as any given article of food is presented to children in an unfavorable context, the chances are high that they will reject this food for part or all of their lives. Unless we can disassociate eating habits from this type of training of children, we may be able to make changes in the diet, but we will never have a population which eats, gaily and unquestioningly, food based on the best nutritional science which we have. For each generation it has to be done all over again. The mother who has, with a great moral effort, learned to drink milk herself, does not merely place a pitcherful of milk on the table and let her children follow her example as she pours it out—although this is the simple method by which many societies teach their children to eat the food which is approved—but she, because of the conflict within her own personality, will argue, threaten, cajole, bribe and punish her children to make them "drink their milk," thus laying the basis for the serious food problems which fill the clinics, and the intractability which often withstands the best planning of the institutional dietitian.

An institutional dietitian would laugh at a program of group feeding which regularly placed the less nutritional foods in the more attractive setting and then relied upon sermons and texts printed on the walls, or buttons and emblems distributed to those who made nutritionally sound choices. Institutional experience has shown clearly enough that if the way in which food is presented to people is carefully thought out and if it is well enough arranged, people will eat the correct food.[13] Recent investigations have shown that in spite of this symbolic role of food most people eat most of what is set before them, disregarding their personal likes and dislikes. Even in cases where wives have claimed that they would serve a more nutritionally correct diet if their husbands were willing, careful check-ups have shown that the wives were actually serving the food which they liked themselves, and in some cases the husbands were eating food which they did not like. Studies of dormitory and boarding-house groups reveal how great is the control exercised by the person who plans the meals.

[13] There is every probability that factors of taste may underlie the food habits of individuals of different ages and of different physiological status. It is necessary, however, to identify the cultural factors governing attitudes toward food before it is possible to attack these physiological factors.

EDUCATING THE PUBLIC IN NEW FOOD HABITS

Now, during this wartime situation when public attention is concentrated on food—not only because of the National Nutrition Program but because of the great numbers of shifts and changes in actual food supply with which the country is confronted—there is a rare opportunity to take the already well-documented findings of the institution and the clinic and generalize them into a program of public education. From the experience of the food clinic comes the recognition that the meanings attached to food, and the plot of the individual personality, can offer enormous resistance to changing food habits. From institutional experience comes the recognition that in group feeding situations, it is the planner, the person who controls the buying, preparation and serving of the meals who holds the key. If we can take these two insights, it will be possible to make a series of appeals in which the meal planner is emphasized, in which everyone will eat correctly because his home meal, his meal in a restaurant, a canteen, or a cafeteria is correctly planned. If we are to establish a dietary pattern good enough to carry us through the war period of shortages and alternatives with the accompanying anxieties and strains, a pattern which will survive after the war, it is necessary to shift the onus from the eater to the planner.

At the present time there is a tremendous opportunity for the institutional dietitian to take the leadership in establishing a public opinion which will demand well-balanced meals prepared in a way which conserves the nutritional values of food, just as the public has come to demand that food should be prepared in a sanitary manner and served under pleasing and sanitary circumstances. People do not pat themselves on the back when they eat in a clean restaurant or feel that they have committed an act of moral heroism when they sleep between clean sheets. All such regulations are now subsumed under a general heading that it is right to be clean and the details have taken their proper place as habitual behavior.

By a similar shift in the public attitude toward food, it would be possible to establish a national dietary pattern in which the onus would be on those who plan and serve meals, and it would be much easier to convey to them changing scientific information, so that, instead of attempting to keep the entire eating public up to date nutritionally, only those professionally concerned with planning meals—dietitians, restaurant keepers, and housewives—need adjust their behavior to our changing nutritional knowledge and the changing wartime food situation.

At the same time that the greatest attention and dignity are given to the task of planning meals during the war, education can be preparing the way for better national dietary patterns after the war, by including instruction in scientific nutrition in every recommended use of alternatives, so that instruction in alternatives for meat, for instance, will include instruction in the nutrients furnished by meat. The balanced-meal plan of the Army can be made a symbol of the kind of food which every housewife will have to learn to give her family after the war. We can accomplish a major cultural shift: substitute a moral premium on demanding and serving balanced nutritional meals, for our traditional, non-scientific moral premium on eating foods branded as unpalatable.

Healthy Food for the War Worker: A Radio Script

Announcer: Jack Spratt and his wife, by an equitable division of the fat and the lean, licked the platter clean. America today has a formidable job of licking to do, and food has something to do with it. We have with us tonight Mrs. Quindara Oliver Dodge, associate professor of institutional management at Simmons College and nutrition representative on the health subcommittee of the Health and Social Services division of the Massachusetts Committee on Public Safety. She will tell us how food can help to win the war.

Mrs. Dodge: Three good meals a day are needed by every worker for optimum health. In war, the attainment of optimum personal health assumes critical importance. We know that better health of war workers results in fewer absences, fewer accidents, better quality work and increased production. Equally important, better health brings a capacity to live each day on a higher level of keen enjoyment.

These are not idle words. They are facts based on careful studies in war industries. Today, with millions starving in Europe and Asia, the world is conscious as never before of the part hunger and poor nutrition play in the subjugation of peoples. We are fortunate in living in the granary of the world and being able to eat nutritious food. Individually, we owe it to our all-out war effort to accept full responsibility for our own health.

Accepting full responsibility for our personal health and that of our families necessitates planning and providing three good meals a day. Those who live away from home can accept this same responsibility through careful selection of meals and allowing adequate time in which to eat.

Breakfast is usually the worst meal of the day. A survey in Cincinnati revealed the typical breakfast menu for war workers varied from nothing at all to just coffee, or coffee and toast, or cereal, coffee and rolls. Imagine working at heavy manual labor all morning with nothing for breakfast! The management of a Massachusetts factory was disturbed last summer to find that many workers who came without breakfast were raiding lunch boxes around ten o'clock. Even a good evening meal will not compensate for the inadequacies of breakfast and lunch.

Good meals, to be enjoyed and used to best advantage by the worker, must provide foods selected for their optimum nutritive value, be well-cooked and served in attractive, pleasant surroundings in a cheerful atmosphere. The management owes it to workers to provide such facilities for their meals in the plant.

The rules of good nutrition are easy to follow and easy to check once they are known. Therefore, what the worker will select for his noon meal or take in his well-filled dinner pail will depend upon what he has for his other two meals. A total day's food supply should contain the following foods. Listen carefully and you can decide whether your food today was adequate for optimum health.

(1) A pint of milk, that is, two glasses of milk, and you can count cheese or buttermilk as part of that. (2) A serving of meat, poultry, or sea foods. (3) One egg. (4) An orange, or tomato, or a serving of grapefruit, orange juice, tomato juice or raw cabbage. (5) One or more servings of leafy green or yellow vegetables, such as spinach, kale, cress, carrots, etc. (6) Two or more servings of potatoes, other vegetables, or fruits. (7) A serving of whole grain cereals, such as rolled oats, cracked wheat, etc. All of your white bread should be enriched white bread, and all of your flour should be enriched white flour, or else you should use whole wheat bread or whole wheat flour. (8) Fats, such as butter, or oleo with added vitamin A, and such other foods as you may want in order to satisfy your appetite, including of course a sufficient amount of water to drink.

Meal time should be an event in the home. The best food, in the most pleasant surroundings, loses appeal if bolted. The faithful alarm clock can be relied on to get Mother up in time to prepare and serve the hot appetizing breakfast as well as to get the father and children up and dressed in ample time to eat with relish. Under these conditions, breakfast often becomes the favorite meal of the day and each member starts out well fortified for anything that lies ahead.—*Presented over WMEX, November 23, 1942, under the sponsorship of the Massachusetts Committee on Public Safety.*

Developments in Dehydration[1]

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THE preservation of foods by drying has been practised for many centuries. Foods such as dried figs, raisins, and other fruits as well as meats and fish were probably known to the ancients. In England it is said that the method of drying green peas on the vines, in the shocks, or under cover without artificial heating has been used for generations. In this country Indians sun-dried buffalo meat, fish, and even fruit in certain areas. The early American settlers prepared a product termed "Samp" by sun-drying sweet corn cut from the cob.

Probably the first use of dehydrated vegetables by armies in combat occurred during the Civil War. Prescott (1) states that dried vegetables, pressed into briquette form after drying, were used by the Union Armies for the purpose of preventing scurvy. This use, however, was not extensive. In 1864 the Army of the Potomac over a period of three months was issued about 600 lb. dried potatoes, 5320 lb. mixed vegetables and 551,812 lb. dried apples. Prescott quotes from a report by Surgeon General C. S. Tripler on operations of the Army of the Potomac from July 1861 to July 1862 as follows: "I investigated the report with regard to scurvy and found it erroneous. I, however, requested the Adjutant General to compel the men to use desiccated vegetables and to make soup daily. General Dana says he cannot comprehend why the men should have scurvy with their present ration; but I am informed that the desiccated vegetables are so disagreeable to the taste that the men cannot eat them." It is apparent that the procedures then current for pretreating, drying or packing the vegetables were inadequate to prevent undesirable changes in flavor or loss of vitamin C.

Dried vegetables were also used during the Boer War. Soup vegetables previously stored for 15 years in paraffined barrels were used by the British troops. It would be most interesting to know the facts concerning the nutritional qualities and taste appeal of these vegetables.

During World War I about nine million pounds of dehydrated vegetables were shipped overseas according to Nichols *et al.* (2). A goodly proportion of these vegetables were, I am sorry to say, prepared in California. With the exception of potatoes, most of the vegetables were not blanched prior to dehydration. Drying was accomplished in most instances in poorly operated and controlled evaporaters or dehydraters. Returning veterans indicated that these vegetables as served to soldiers in France were extremely poor in flavor and frequently tough. In order to make them more palatable, some cooks prepared stews by mixing the vegetables with canned meat or occasionally even with canned salmon. An important contributing factor to the toughness and lack of flavor of the dried vegetables used in World War I was the failure to blanch them before drying.

Once again we are at war and once again there is an increased interest in dehydration. Dehydrated eggs and milk as well as vegetables and fruits are being produced on a large scale. The production of dehydrated meat has started and dehydrated fish is receiving experimental consideration.

Although wars have always been the most important factors in stimulating the production of dehydrated foods, except the ever-staple dried fruits, there have been flurries resulting from other causes. The Alaskan gold rush stimulated a slight and temporary production of dehydrated potatoes. During the years 1920–30 there was an interest in dried Jerusalem artichokes as well as other vegetables to be used in "vegetized" breads and baby products. The Jerusalem artichokes, rich in the polysaccharide inulin, were dried with a view to selling them to diabetics. Inulin yields fructose, a sugar alleged to be less harmful than glucose to such patients. These developments, of course, were not lasting.

Following World War I, attempts were made to interest the civilian population in dehydrated vegetables, particularly pumpkin and corn. These attempts had temporary successes but eventually resulted in complete failure.

The basic reason for the failure of housewives as well as soldiers to accept dehydrated vegetables, was their poor quality with regard to taste, odor, and appearance when cooked. This, of course, has not been true of powdered garlic, onions, celery and

[1] Presented before the American Dietetic Association, Detroit, October 19, 1942.

chili, for use as flavoring in certain processed meat and canned products as well as in ordinary cooking. Dried fruits have been staple products for years and have a good trade acceptance. In my opinion certain dehydrated foods such as potatoes, milk, and possibly eggs, may find a place on the domestic market after this war is over.

ADVANTAGES AND DISADVANTAGES OF DEHYDRATION

Dried foods have much less weight and volume than fresh foods. Dried vegetables have only one-eighteenth to one-fifth the weight and one-third to one-ninth the volume of fresh vegetables before drying. Table 1, based on that by Prescott (3), and Table 2 by Colonel Logan (4), show these relationships. It is apparent that dehydration is an advantageous means of preservation, in times like these, when shipping space is at a premium and foods must be transported over distant and difficult terrain.

TABLE 1

Weights of vegetables (prepared for processing, canned and packed, or dehydrated and packed) obtained from one ton of the fresh (as purchased)

ITEM	WHEN PREPARED FOR CANNING OR DEHYDRATION	WHEN CANNED AND PACKED	WHEN DEHYDRATED AND PACKED
	lb.	*lb.*	*lb.*
Cabbage	1450	2400	215
Corn	750	1426	465
Beans, Lima	800	2300	250
Beans, string	1500	3832	200
Peas	1960	4291	350
Potatoes, sweet	1450	2259	513
Pumpkin	1400	2146	200
Tomatoes	1100	1763	125

TABLE 2

Cubic displacement of one ton of fresh, canned and dehydrated vegetables

ITEM	WHEN FRESH	WHEN CANNED	WHEN DEHYDRATED
	cu. ft.	*cu. ft.*	*cu. ft.*
Beets	76	74.6	23.6
Cabbage	108	82.1	36.0
Carrots	76	74.6	28.0
Potatoes, sweet	141	69.6	16.7
Potatoes, white	68	69.6	18.0

Some dehydrated foods are equal in color to the canned product. On the other hand, certain dehydrated foods, such as vegetables, even at best are not equal to the fresh or canned product after cooking. Differences in flavor, texture, appearance and aroma may be apparent.

Dehydrated foods must be "rehydrated" before they can be eaten. Rehydration ratios are seldom if ever equal to the dehydration ratios. This is well illustrated in Table 3 based on that by Colonel Logan (4). Although this is not a serious factor, it must be taken into consideration when the dried materials are used.

A common and fallacious belief is that dehydrated foods are not perishable. In line with this belief some buying agencies classify dried fruits as non-perishable along with canned foods. Dried foods are susceptible to insect infestation if protective measures such as fumigation or the use of proper containers are not employed. Chemical changes resulting in off-flavors and odors, discoloration and loss of vitamins are more apt to occur in warm than in cool storage. Air and moisture also facilitate these changes.

TABLE 3

Dehydration and rehydration ratios

DEHYDRATED ITEM	DEHYDRATION RATIO	REHYDRATION RATIO
Apple nuggets*	10 to 1	1 to 8
Beets	10 to 1	1 to 7
Cabbage	18.5 to 1	1 to 8.50
Carrots	10 to 1	1 to 5.75
Cranberries	10 to 1	1 to 12 (sauce)
Eggs, whole	—	1 to 3.30
Milk, skim	11 to 1	1 to 10
Onions	10 to 1	1 to 6
Potatoes, julienne-style	6 to 1	1 to 3.67
Potatoes, sweet	4 to 1	1 to 3
Potatoes, white, precooked, riced	6 to 1	1 to 5
Soup, pea or navy bean	—	1 to 4 (thick) 1 to 6 (thin)
Turnips, yellow	12 to 1	1 to 6

* Dried apples which have been ground and dried under vacuum to less than 2% moisture. As the name implies, the form is similar to small nuggets.

In spite of these objections, dehydrated potatoes are used increasingly because of the convenience. When handled properly they keep well for a long time, no precooking is necessary and they are easily handled. We have always been partial to dried fruits because of their comparatively low cost and high nutritive value. We find dried milk a great convenience in certain circumstances.

DEHYDRATION PROCEDURES

Preparation of Vegetables Prior to Drying. The principal operations involved in the preparation of vegetables for drying are: washing, sorting, trimming, preparation for blanching, blanching, and traying. Washing is necessary to remove adhering dirt and foreign materials. During sorting and trimming, undesirable vegetables or parts of vegetables are removed. For example, in carrots the ends are cut off and when the root is discovered to be woody or decayed, the whole carrot is discarded.

Preparation for blanching consists of shelling peas and Lima beans, peeling potatoes and root vegetables, husking and silking sweet corn, and slicing, dicing, stripping or shredding certain vegetables.

Blanching is a very important operation, designed first to inactivate the enzymes thought to be responsible for undesirable changes in color, odor, and texture and to reduce the loss of certain vitamins during drying and subsequent storage; and secondly, partially to precook the dehydrated vegetables so that they will refresh rapidly in water and cook quickly. Blanching is necessary in most cases if satisfactory dehydrated products are desired for replacing the fresh or canned. The exceptions to this are onions, garlic and red peppers.

Blanching is accomplished in most instances by passing the cut vegetable through a steam-filled tunnel on an endless wire mesh conveyor. The blanching time varies considerably with material to be dried but usually requires from 4 to 8 minutes. Materials to be riced or powdered are not handled in this way. Blanching under steam pressure is an innovation coming into use. After blanching, the vegetables are placed evenly on trays in order to ensure uniform and complete drying.

Preparation of Fruits Prior to Drying. One of several procedures is used in the production of dried fruits, depending upon the fruit and type of product to be prepared. The more important procedures are as follows: (a) fruit is cut, sulfured and sun-dried (apricots, peaches, pears and nectarines); (b) fruit is peeled, cut, sulfured and evaporated (apples); (c) fruit is dipped in an alkaline solution and then sun-dried (soda-dipped raisins and prunes) or dehydrated (prunes); (d) fruit is sun-dried or dehydrated without pretreatment (figs and natural raisins); (e) fruit is dipped in alkaline solution, sulfured and dehydrated ("Golden Bleached" raisins) or exposed to the sun and then dried in the shade (sulfur-bleached raisins); (f) fruit is sulfured, exposed to the sun 1 to 2 days and then dehydrated (Kadota figs).

Ordinarily, apricots, peaches, pears and nectarines are sun-dried because the trade has considered the dehydrated product inferior. Although dehydrated fruit is cleaner and higher in certain vitamins than the sun-dried, it has not been accepted, primarily because of an opaque rather than translucent appearance which is characteristic of the sun-dried product. In order to obtain a translucent appearance in the dehydrated cut fruits, it has been necessary to expose them to the sun for a day or so after sulfuring and prior to dehydration. This is considered a costly procedure which does not obviate the need of partial sun-drying. Recently it has been found that if these fruits are steam-blanched prior to sulfuring and then dehydrated without exposure to the sun, the fruit is translucent, the vitamin retention better and the drying time shorter (5). It is questionable, however, if this method can be used with eastern freestone peaches because of the necessity of peeling to eliminate fuzz.

Preparation of Other Products for Drying. According to Mulvany (6), whole eggs are not given a pretreatment prior to drying. Jack and Henderson (7) state that preheating prior to spray-drying greatly improves the keeping qualities of powdered milk. Meat, according to the procedure outlined in *Food Industries* (8), is ground and cooked preparatory to drying.

Drying Procedures. The methods of drying in most common use are referred to in the trade as "sun-drying"; "evaporation"; "dehydration"; and "vacuum"; "spray"; and "drum-drying." Sun-drying is self-explanatory and is used for the production of dried apricots, peaches, pears, nectarines, natural raisins and about half of the prunes produced. It consists of placing the material on trays exposed to the sun for 3 to 20 days until about two-thirds dry. Then the trays are stacked and drying is completed in the shade.

Evaporation may be defined as drying by artificial heat circulated by natural draft, a method most frequently used for drying apples and hops in this country. In Canada, on the other hand, apples are commonly dried by dehydration. The material to be dried by evaporation is placed on screen-bottom trays or slatted floors through which heated air passes. It is generally considered an obsolete method, offering little control. The home evaporator, with which some of you may be familiar, is an example of this type of drier.

In dehydration, drying is accomplished with artificial heat but in addition there is mechanical circulation of the heated air. Dehydraters are usually tunnels holding twelve to twenty cars, each containing about twenty trays. The cars are lined up end to end in the dehydrater and are moved periodically from one end toward the other. Drying is accomplished by blowing air through the trays over the material to be dried. There are several systems of air flow with respect to the movement of the cars through the tunnel. Some recent developments in dehydration are: the so-called Eidt principle, *i.e.* the circulation of washed combustion gases over the drying material and the use of superheated steam. Eidt (9) introduced the idea of initial drying at a high temperature with the air flow paralleling the movement of the cars through the tunnel, followed by drying in air at a lower temperature and moving in the opposite direction. This has proved very effective for vegetables and apples.

Some excellent dried fruits, vegetables and meats have been produced by blowing heated combustion gases free of oxygen over the foods while drying.

In this procedure the food is prepared, blanched, dried and finally stored in these inert gases. The procedure is still in the experimental stage.

The use of so-called superheated steam for blanching vegetables has given some very promising results. In one process, water vapor is introduced with air at 180°F. into the drying tunnel. Vegetables can be dried in a comparatively short time when this procedure is used.

It is apparent that the new ideas being introduced and the studies being carried on at the various research agencies will bring about improvements in the quality of dehydrated products as time goes on.

Drying times and temperatures vary with the material being dried. Prunes are dried at 165°F. and require eighteen to twenty hours for drying. Walnuts, on the other hand, are dried at 110°F. and have a shorter drying time. In this case, if 110°F. were exceeded the walnuts would become

TABLE 4

Loss of sugar from raisins subjected to various drying temperatures

TEMPERATURE, DEGREES FAHRENHEIT	HOURS EXPOSED	PER CENT OF SUGAR LOSS
140	8	0.6
140	16	0.8
140	32	1.0
167	8	1.3
167	16	1.9
167	32	6.2
185	8	8.7
185	16	12.2
185	32	14.9

rancid in storage. The maximum safe drying temperature is termed the "critical temperature" and varies with each material to be dried. The effect of drying temperature on the final quality of the product is well illustrated in Table 4. Sugar destruction is greater at the higher drying temperatures.

Dehydration is the most common method used for drying, being employed for both fruits and vegetables. It permits a good control of drying temperature, relative humidity and air flow.

Vacuum-drying is self-explanatory and is used on a large scale in one instance at least for the preparation of apple "nuggets" which contain less than ten per cent moisture. Vacuum driers are generally considered more effective from an economic point of view for drying partially dried, rather than fresh materials. For example, dried apples containing 18 to 20 per cent moisture are used in the preparation of apple nuggets which contain less than ten per cent moisture.

Liquids, such as milk or eggs, are dried in spray driers by spraying a fine mist through heated air. Drum driers are heated rotating drums which dry liquids such as tomato or cranberry purées in a very short time by direct contact of the drum with the juice. The resulting dried products are very low in moisture content and are sold as flakes or powders.

NUTRITIONAL VALUE OF DRIED FOODS

When water is removed, some of the substances giving flavor and odor characteristics to the products are in most instances also removed. This is quite obvious if one is within a block or so of an onion drier during operation. The same is true, although not quite so apparent, for other substances. Carbohydrate, protein and calorie values, on the other hand, are maintained to the fullest extent. Table 5 prepared by Prescott (3), illustrates the values, exclusive of vitamins and minerals, of several vegetables, fresh and dehydrated.

TABLE 5

Relative food values of several fresh and dehydrated vegetables (the dehydrated calculated to 10 per cent moisture basis)

VEGETABLE	WATER	PROTEIN	TOTAL CARBOHYDRATE	FUEL VALUE PER POUND	RATIO OF FUEL VALUE OF FRESH TO DEHYDRATED (APPROXIMATE)
	per cent	*per cent*	*per cent*	*calories*	
Cabbage, fresh, edible portion	91.5	1.6	5.6	145	
Cabbage, dried	10.0	16.9	59.3	1536	1 to 10.6
Corn, green, edible portion	75.4	3.1	19.7	470	
Corn, dried	10.0	11.3	72.1	1720	1 to 3.7
Peas, green, edible portion	74.6	7.0	16.9	385	
Peas, dried	10.0	24.8	59.8	1646	1 to 3.5
Potatoes, fresh, edible portion	78.3	2.2	18.4	385	
Potatoes, dried	10.0	9.1	76.4	1598	1 to 4.1
Pumpkin, fresh, edible portion	93.1	1.0	5.2	120	
Pumpkin, dried	10.0	13.0	67.8	1565	1 to 13.0

The information available concerning the effect of treatment on vitamin retention by dried foods is far from complete. Tressler (10) has reviewed the literature concerning the nutritive value of dried and dehydrated fruits and vegetables. With respect to vegetables, the published information available concerning the effect of treatment on vitamins is not extensive. It is sufficient, however, to indicate that certain procedures are desirable and others undesirable. For example, there is some evidence to indicate that steam-blanching prior to dehydration inactivates enzymes, causes removal of air from the vegetable tissues and favors the retention of vitamins A, B and C. Data presented by Tress-

ler to the Federated American Societies of Experimental Biology in April 1942, on the other hand, show that most of the vitamin B and C may be lost during preparation and drying by the usual procedures. Water-blanching tends to remove the water-soluble vitamins, hence steam-blanching is better.

There is no evidence to indicate the fate of other vitamins when vegetables are dried. Niacin, however, is a stable vitamin and very probably remains unharmed in the dried product. The practice of drying garlic and onions, without the use of a steam-blanch, is followed in order to preserve as much of the aroma and flavor as possible. Since these vegetables are used for seasoning, this is a desirable procedure. Chili peppers are dried in a manner that will retain the desirable red color in the dried product. Most other dried vegetables, however, are used as food materials and should be prepared in a manner favoring desirable attributes with regard to taste, odor, appearance and vitamin retention. Our present knowledge, though incomplete, indicates that this necessitates the use of a steam-blanch prior to drying. The rate of drying, too, apparently is an important factor in vitamin retention. Recently it has been shown that the best retention of vitamin A in spinach and carrots was obtained when steam-blanched vegetables were dried in the shortest time feasible. To secure rapid drying for these vegetables, a high temperature such as 180°F. is advisable at the start and lower temperatures later.

There is no information available concerning the effect of spray-drying, following cooking and sieving, on vitamin retention. Vacuum-drying favors vitamin retention but is rather expensive to use for the production of dried vegetables.

Properly prepared, dried vegetables may lose some of their vitamin value in storage. Published information concerning changes in storage is sparse and incomplete. The information available indicates that higher temperature, prolonged storage periods, and air, favor vitamin destruction. Light may or may not be a factor. There is some evidence which indicates that light may have a destructive effect on vitamins A, G, E and K in products other than dried vegetables.

Considerable information is being accumulated by various research agencies concerning the effect of pretreatment, drying and storage on vitamin retention by dried vegetables. This picture should be clearer in the near future.

There is much to be said for dried fruits from the standpoint of comparative food values. Most of the work on vitamin retention in dried fruits has been done by Morgan and her colleagues (11–18).

Sun-dried raisins lose practically all of the vitamin C during drying, but it is retained in sulfured raisins. Much of the vitamin B_1, riboflavin, and some of the carotene is retained during drying. Dehydration, rather than sun-drying, favors retention of vitamins A and B_1 in raisins. Sulfuring destroys vitamin B_1, but alkaline dips seem to have no effect on this vitamin. There is no information concerning vitamin changes occurring in storage.

Dried prunes, like raisins, are devoid of vitamin C, although fresh prunes contain a fair amount of this vitamin. Dried prunes, when properly prepared, are good sources of vitamins A, B_1 and riboflavin. According to some recent data obtained by Morgan, they also contain pyridoxine. Dehydrated prunes contain more of vitamins A and B_1 than do sun-dried prunes. Prunes are never sulfured for commercial use, but in tests conducted with sulfured experimental samples it was found that most of the vitamin C was retained and most of the vitamin B_1 destroyed.

Cut fruits (apricots and freestone peaches) are good sources of vitamins A and C. Sulfuring tends to preserve these vitamins but destroys most of the vitamin B_1 present. Dehydration is superior to sun-drying although this is not done commercially because the dehydrated product has a yellowish color that is not acceptable to the trade. Steam-blanching prior to sulfuring facilitates the retention of beta-carotene and vitamin C in dehydrated apricots and peaches. When steam-blanched apricots are dehydrated without sulfuring, the beta-carotene retention is about thirty per cent greater than in unblanched and unsulfured fruit. Vitamin C, on the other hand, can be expected to be low and about the same in both. There is no information concerning dried pears, nectarines or California apples.

Cut fruits frequently darken during storage. When dried apricots darken there is a decrease in beta-carotene. As they darken, vitamin C also decreases in certain other fruit products. This is probably also true of all sulfured fruits as was proved for apricots by Morgan, Field and Nichols (14). Even though the fruit may be processed in such manner as to restore a light color, the beta-carotene is not restored. If sulfured fruits contain less than 400 p.p.m. SO_2, vitamin A destruction progresses more rapidly. Further decrease in SO_2 content accelerates vitamin A destruction still more. Two important factors are involved in maintaining a safe level of SO_2 concentration in the fruit. The first is sulfuring and drying fruit in such a manner that when it is delivered to the packer it contains about 2000 p.p.m. SO_2. In certain areas in California the drying weather is so unfavorable that most of the SO_2 absorbed by the fruit during sulfuring is lost while drying. In fact, dried fruit from these areas frequently contains only 400 p.p.m. SO_2. This means, then, that some vitamin A destruction may occur before the fruit is delivered to the packer.

This problem could be solved by dehydrating fruit pretreated by steam-blanching and sulfuring.

A second factor involved in the retention of sulfur dioxide and hence of vitamin A, is storage. Fruit should be stored in such a manner that a minimum of SO_2 is lost during the storage period. This may be accomplished by storing the fruit containing borderline quantities of SO_2 in cold storage, which is impracticable at present, or by reducing the moisture content of the fruit before storing. Fruits containing 10 to 12 per cent moisture do not lose SO_2 so rapidly as fruit containing 17 to 20 per cent moisture. Drying fruit to a lower moisture content would be a simple means of retarding storage losses of SO_2 and subsequent loss of vitamin A. However, if fruit were to be dried to 10 to 12 per cent moisture it would be necessary to change the basis for compensation to growers. In order to encourage more complete drying and still prevent a loss of income to growers, technical men in the industry have been advocating the purchase of dried fruit from growers, on a limited moisture basis. A grower delivering fruit at a fixed moisture standard, say 12 per cent, would receive a price sufficiently high to compensate for the loss in weight. For instance, if he normally delivered fruit containing 18 per cent moisture he would receive about seven and one-half per cent more for fruit containing 12 per cent moisture. If wet fruit were delivered, on the other hand, the producer would likewise be penalized. However, neither growers nor packers have as yet found the plan acceptable.

Figs contain some vitamin C in the fresh state but none when dried, even though they may have been sulfured. A possible explanation for this is that figs normally undergo a partial drying on the trees before harvesting and vitamin C destruction may occur during this period. Sulfuring favors the preservation of vitamin A in all varieties. It has no effect on riboflavin. Vitamin retention is greater when the fruit is dehydrated than when sun-dried.

Cranberries dried in air lose vitamin C; when dried in an atmosphere of nitrogen, vitamin C is retained.

Information concerning vitamin retention in other dried foods is still fragmentary and requires further consideration.

STORAGE OF DRIED FOODS

A discussion of drying and dried foods would not be complete without at least brief reference to the storage problems. Dried foods are perishable products and must be handled accordingly, although it is frequently claimed that they are nonperishable. They are susceptible to insect infestation even though dried and must be kept in protective containers or in cold storage. Chemical changes resulting in off-flavors and odors and discoloration, as well as a decrease in certain vitamins, are common occurrences. These changes occur most rapidly when the products are stored at high temperatures. They occur more rapidly in air than when packed in a vacuum or in an inert gas such as nitrogen (*see* Table 6). Improperly dried foods undergo chemical deterioration more rapidly than well-dried foods. Microbiological deterioration, which occurs in dried fruits containing as little as 18 per cent moisture, can be retarded by proper drying and storage at cool temperatures. Dried vegetables will mold if exposed to humid climates where moisture can be absorbed. Available evidence indicates that pathogenic and most other bacteria cannot long survive on dried fruits or vegetables. The survival of bacteria in dried eggs and milk, on the other hand, is more readily prolonged and should be carefully controlled by use of sanitary measures and sound raw materials.

In closing, it is my belief that dried foods have a bright future, at least for the duration. We must, however, strive to improve their quality through better production methods. The consumer, too, may need to be better informed with regard to buying, preparing, serving and storing dried and dehydrated foods.

TABLE 6

Changes in quality of California apricots during storage in Manila, P. I.

PACKING TREATMENT FOR FRUIT	UNPROCESSED, IN 2-LB CARTONS		PROCESSED, IN 2-LB CARTONS		UNPROCESSED, IN NO. 2 CANS, VACUUM-SEALED		PROCESSED, IN NO. 2 CANS, VACUUM-SEALED	
Date examined	SO_2	Color	SO_2	Color	SO_2	Color	SO_2	Color
	*p.p.m.**		*p.p.m.*		*p.p.m.*		*p.p.m.*	
May 27, 1929 (when packed)	735	Excellent	1412	Excellent	735	Excellent	1412	Excellent
Nov. 18, 1929	111	Poor	239	Fair	179	Poor	930	Excellent
April 21, 1930	130	Black	155	Black	180	Poor	625	Fair
Oct. 15, 1930	46	Black	—	—	97	Black	252	Poor

* Sulfur dioxide in parts per million

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Dried Food for Britain

It is estimated that dehydration has saved shipping to the extent of 3,000,000 tons of water annually. A quart of milk has a volume of 69 cubic inches and weighs 41 ounces. Condensed, it has a volume of 27 cubic inches and weighs $16\frac{5}{16}$ ounces. Reduced to a powder it has a volume of $15\frac{5}{16}$ cubic inches and weighs $5\frac{3}{16}$ ounces. With the powder compressed into a block the volume is further reduced to $7\frac{7}{16}$ cubic inches. This discovery makes possible the preservation of rich spring and early summer milk for winter use.

Next year we shall import 100,000 tons of dried egg; the equivalent importation of egg in shell would amount to more than 500,000 tons and more than six times the shipping space. A similar saving is made by importation of dried meat. Another advantage is that dried egg and meat do not require refrigeration for transport or storing. Scientists here and in the dominions have cooperated to produce a method of shipping and storing butter without refrigeration. Butter consists of fat 82.5 per cent, water 16 per cent, milk solids 5 per cent and salt 1 per cent. Being perishable, it has to be frozen for transport and storage. By removing the water and nonfatty solids, a pure dry butterfat is obtained, which is relatively nonperishable, is not spoiled by microbes and will keep for months without refrigeration. Most of the nutritive value of butter lies in its calorific property, and the vitamins A and D are in the fat. In New Zealand and Australia butterfat is prepared by melting the butter and removing the water and fat by centrifugation. Here the butter can be reconstituted by churning in water, separated milk powder and salt. Summer butter, which has a higher nutritive value than winter, can thus be stored for winter use.—*Foreign Letters, J. A. M. A., 120: 855, 1942.*

The Nutritive Value of Dehydrated Vegetables[1]

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THE outbreak of the war has aroused great interest in the preservation of foodstuffs by dehydration. Through the adoption of a large-scale dehydration program the United States Government plans to meet a considerable proportion of the food requirements of the armed forces and those of Lend-Lease. It is hoped that this will result in large reductions in the amount of critical metals required for packaging foodstuffs and that a substantial saving of cargo space will be effected.

The establishment practically overnight of the vegetable dehydration industry has brought forth many questions, one of which is the nutritive value of these products. Nutritive values are especially important because the variety in the diet may be restricted in the areas to which dehydrated vegetables are sent, and therefore the foodstuffs imported must supply the many essential nutrients. Nutritive values may also be used as indices of quality for it has been shown that when vegetables are improperly handled or processed the vitamin A and C potencies are diminished.

The dehydration of vegetables on a rather large scale was first attempted in America during World War I and it soon became apparent that while the freshly-dried material in many cases was quite palatable, its quality soon deteriorated on storage. During the interval between World War I and 1939 or 1940, not many advances were made in the technology of vegetable dehydration. Instead, preservation of vegetables by freezing made more rapid progress. One of the problems facing the processors of frozen vegetables was similar to that encountered in drying vegetables; namely, the quality was adversely affected during storage unless certain precautions were taken. By means of cooking the product for a short period or scalding it prior to freezing, the frozen vegetable remained wholesome for a much longer time. It was natural, therefore, to apply some of the experience gained in the freezing industry to the problems involved in dehydration, since the preparation of the vegetables up to the time they are placed in the freezer or drier is very similar. Blanching has as its purpose the fixation of pigments, the removal of air from the tissues, and the whole or partial inactivation of enzymes present. From the standpoint of the conservation of vitamins, it is essential that these enzymes be destroyed. It has been shown that the presence of peroxidases causes the rapid destruction of carotene (1) and that oxidases catalyze the destruction of ascorbic acid (2).

While it is serious to err by underblanching, too long a blanching period causes a large loss of the water-soluble vitamins. Jenkins, Tressler, and Fitzgerald (3) demonstrated that there is a progressive loss of ascorbic acid with increased blanching time. These authors also showed that there were additional losses during washing, grading and other processes incidental to the freezing of peas. An increased loss in the vitamin C content of frozen Lima beans was noted by Tressler, Mack, Jenkins, and King (4) when the blanching period had been prolonged. That there is little real destruction but rather a leaching of the ascorbic acid, when the vegetables are placed in boiling water, has been shown by Mack, Tapley, and King (5) in the case of string beans. Vitamin C was also shown to be dissolved into the water during the cooking of peas (6), cabbage (7), and Swiss chard (8). Thiamin, a water-soluble vitamin of the B complex, was found to be lost from peas and asparagus during the processing prior to freezing (9). The loss varied from 16 to 20 per cent in the case of asparagus and from 12 to 22 per cent with peas.

The losses of carotene from vegetables during processing for freezing have been found to be rather small. This vitamin retention might be expected since carotene is not water-soluble. The blanching of peas, according to Stimson, Tressler, and Maynard (10), entailed no loss of carotene. A loss of the precursor of vitamin A, carotene, was noted in the blanching of "Frenched" beans and asparagus, being about ten and fifteen per cent respectively (11, 12).

[1] A review of researches carried out at the New York State Agricultural Experiment Station and New York State College of Home Economics, and approved by the Director of the New York State Agricultural Experiment Station for publication as Journal Paper No. 535, November 23, 1942. Presented before the American Dietetic Association, Detroit, October 19, 1942.

Tressler (13), in a review of the literature bearing on the nutritive value of dehydrated vegetables, said that the data concerning the losses of carotene and ascorbic acid during dehydration were contradictory. These differences in results he ascribed to variations in blanching time, drying temperature, and storage conditions. These factors had not been given much consideration when listing the nutritive values of dehydrated vegetables. He observed that, in general, where an effort had been made to conserve the vitamin C, the carotene had not been destroyed. There were very few data on the thiamin or riboflavin content of dried vegetables.

INFLUENCE OF BLANCHING AND DRYING ON VITAMIN CONTENT

The work (14) reported herein is a review of a series of experiments performed cooperatively by the Federal Bureau of Home Economics, the New York State College of Home Economics and the New York State Agricultural Experiment Station. The carotene, thiamin, and ascorbic acid contents of the four vegetables—cabbage, rutabagas, beets, and potatoes—were noted during their preparation for dehydration and after drying.

TABLE 1

Vitamin content of rutabagas undergoing dehydration (dry matter basis)

	CAROTENE	THIAMIN	ASCORBIC ACID
	μg. per gm.	*μg. per gm.*	*mg. per gm.*
Fresh	39.6	7.07	3.16
After slicing	37.2	7.14	3.12
After blanching in boiling water	36.5	6.10	2.45
After dehydration	36.0	5.89	0.42

The cabbage was not given any heat treatment before drying. Consequently the loss of thiamin and ascorbic acid was very low, being 10 and 20 per cent, respectively.

In Table 1 are presented the carotene, thiamin and ascorbic acid contents of rutabagas after various stages of processing. Little carotene was lost, but the losses of thiamin and ascorbic acid amounted to 17 and 22 per cent. The actual drying caused little loss of carotene and thiamin, but it did promote the destruction of ascorbic acid to such an extent that only 15 per cent of the original vitamin C remained in the dried product.

When beets were cooked before being diced and dried, about fifteen per cent of the thiamin and ascorbic acid was lost during the cooking. The dicing and drying did not increase the thiamin loss though there was an additional 15 per cent loss of ascorbic acid (Table 2).

During shredding and water blanching, potatoes (Table 3) lost one-third of their thiamin content and nearly two-thirds of their vitamin C. Although drying had little effect on the thiamin content, it almost completely destroyed the ascorbic acid.

It appears, therefore, that little carotene is lost during the processing prior to dehydration or by the actual drying. Thiamin, being a water-soluble constituent, was lost during blanching but was little affected on drying. Vitamin C, on the other hand, was lost during both blanching and drying. The loss of ascorbic acid was so severe in the case of potatoes that little was left in the dried product.

LOSSES OF VITAMINS ON STORAGE

Representative samples of the dried cabbage, rutabagas, beets, and potatoes were packed in tightly-closed glass containers, under CO_2 in closed glass containers, and in cellophane or pliofilm bags. Several samples packaged in each of the three modes were then stored at −40°, 33°, 58°, and 75°F. When packaging with CO_2 the air was displaced from the container by passing in CO_2 for half an hour through a tube reaching to the bottom. Analyses of all the vegetables for ascorbic acid were conducted monthly and for thiamin and carotene after three-month periods had elapsed.

TABLE 2

Vitamin content of beets undergoing dehydration (dry matter basis)

	THIAMIN	ASCORBIC ACID
	μg. per gm.	*mg. per gm.*
Fresh	2.40	0.24
After precooking in boiling water	2.01	0.20
After dicing	2.03	0.20
After dehydration	1.93	0.17

TABLE 3

Vitamin content of potatoes undergoing dehydration (dry matter basis)

	THIAMIN	ASCORBIC ACID
	μg. per gm.	*mg. per gm.*
Fresh	6.17	0.76
After shredding	6.28	0.56
After blanching in boiling water	4.19	0.30
After dehydration	4.75	Trace

Of the three vitamins under consideration, thiamin was the most stable and none of the samples lost an appreciable amount throughout a six-month storage period.

The effect of storage upon the carotene content of rutabagas was determined, and not that of the other vegetables since these did not contain significant amounts of the vitamin. The preservative action of a low temperature on carotene is shown in Figure

1. The use of CO_2 assisted in the retention of carotene at 75°F. and at −40°F.

There was very little loss of ascorbic acid from dehydrated rutabagas (Table 4) or cabbage (Fig. 2) when stored at −40°F. Higher temperatures generally accelerated the loss of ascorbic acid. The use of CO_2 in the storage containers did not seem to be markedly beneficial. The apparent inconsistencies in vitamin potencies may be traced to difficulties in obtaining truly representative samples.

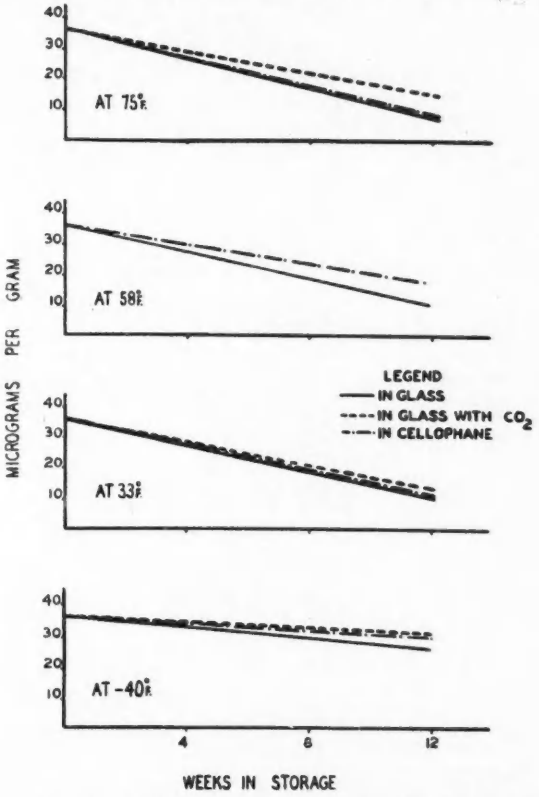

FIG. 1. *Carotene Content of Rutabagas in Storage*

PALATABILITY OF DEHYDRATED VEGETABLES AFTER STORAGE

Cooking studies (15) were conducted on samples of dried beets, cabbage, and rutabagas within a few days after they were dehydrated and after five months' storage at the four different temperatures and with the different methods of packaging.

Experimental work had first to be carried out on the proper method of cooking dehydrated vegetables. For this purpose a panel of judges was selected from the Foods and Nutrition and the Institution Management Departments of Cornell University. The majority of the judges were selected after testing their taste thresholds, a method recommended by the federal Bureau of Home Economics. In some instances the judges were chosen because of their keen sense of discrimination with regard to quality in food.

It was thought that it might be desirable to soak the dried vegetables in water for varying periods of time and at various temperatures prior to actual boiling. It soon became apparent that the temperature of the soaking water had little effect on the palatability. The amount of water absorbed by the different vegetables varied considerably but in all cases it was the judges' opinion that the degree of palatability was highest for the unsoaked and lowest for those soaked the longest time. Soaking caused a loss of flavor and a tendency toward a

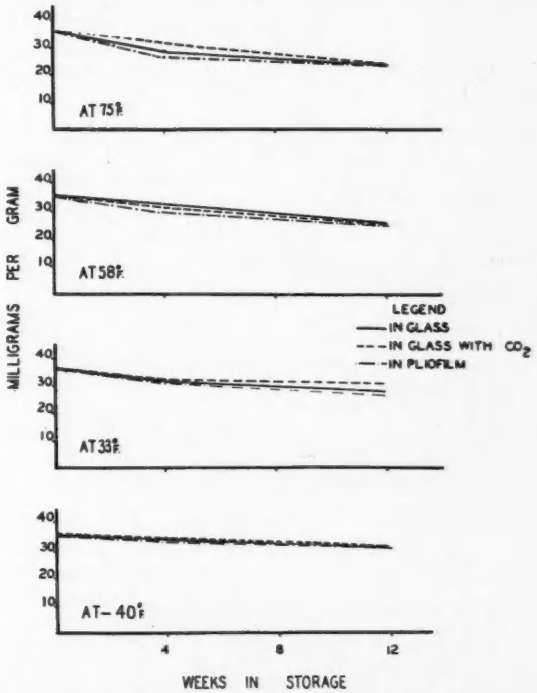

FIG. 2. *Ascorbic Acid Content of Cabbage in Storage*

water-soaked and heavy texture because of the amount of water absorbed.

A standard procedure was adopted, therefore, in judging the palatability of vegetables shortly after dehydration and after five months' storage. Ten-gram samples of vegetables were added to 150 gm. boiling water and slowly boiled for 12 minutes in the case of cabbage, 25 minutes for beets, and 30 minutes for rutabagas.

Of the three vegetables examined, beets were found to be less affected by storage conditions. In all cases the vegetable had retained a natural color and the odor, flavor and texture were characteristic. The cabbage was most susceptible to deterioration at higher storage temperatures. The samples stored

at −40° and 33°F. had a good color, natural flavor, odor and texture. In those stored at the higher temperatures, namely, 58° and 75°F., the color was brown and the flavor insipid, though the odor and texture were natural.

LOSSES OF VITAMINS DURING THE COOKING OF DEHYDRATED VEGETABLES

Since it is important to have an understanding of the losses in nutritive value of dehydrated vegetables during preparation for consumption, carotene, thiamin, and ascorbic acid contents were followed during cooking of certain vegetables known to contain significant amounts of these vitamins (16).

The studies were made on a family and quantity cookery scale. In the family cookery studies it was found that where cabbage was reconstituted in only moderately warm water the ascorbic acid was soon

TABLE 4

Ascorbic acid content of dehydrated rutabagas during storage

PERIOD	CONDITION OF STORAGE	STORAGE TEMPERATURES			
		−40°F.	33°F.	58°F.	75°F.
months		*mg. per gm.*	*mg. per gm.*	*mg. per gm.*	*mg. per gm.*
0	—	0.42	0.42	0.42	0.42
1	Air	0.32	0.47	0.28	0.36
	Cellophane-covered	0.47	0.47	0.36	0.38
	CO_2 atmosphere	0.38	0.60	—	0.39
2	Air	0.27	0.45	0.43	0.26
	Cellophane-covered	0.34	0.55	0.26	0.24
	CO_2 atmosphere	0.34	0.36	—	0.35
3	Air	0.38	0.35	0.37	0.31
	Cellophane-covered	0.44	0.40	0.38	0.43
	CO_2 atmosphere	0.43	0.46	—	0.34
4	Air	0.41	0.21	0.18	0.16
	Cellophane-covered	0.38	0.26	0.19	0.19
	CO_2 atmosphere	0.42	0.34	—	.017

destroyed. This was undoubtedly due to the presence of the oxidase in the unblanched cabbage. Placing the dried cabbage directly into boiling water greatly aided in the vitamin C retention. Neither the temperature of the soaking water nor the duration of the reconstitution affected the thiamin retention of beets, cabbage, rutabagas or potatoes. Of great importance was the quantity of cooking water used. The use of large amounts of water resulted in marked losses of thiamin, ascorbic acid and carotene (Table 5).

In the cooking of larger quantities of dried beets, cabbage, rutabagas, and potatoes, the losses of thiamin were no greater than those observed in the family cookery studies. The holding of the steamed beets, cabbage, and rutabagas in an institutional warming-oven for one hour brought about no further loss of thiamin. It is interesting to note, from a palatability point of view, that the steamed cabbage and rutabagas had an odor and flavor inferior to those cooked on the family scale.

SUMMARY

A preliminary study of the carotene, thiamin, and ascorbic acid content of cabbage, rutabagas, beets, and potatoes was made prior to dehydration, during dehydration, after storage, and after cooking. Though there was little loss of carotene during processing, its loss was rapid at all storage temperatures above −40°F. Storage under carbon dioxide tended to diminish this loss. Some of the thiamin was leached out during the blanching process prior to dehydration, but there was no further loss of this vitamin during drying or on storage. Little of the original vitamin C content remained after dehydration.

TABLE 5

Effect of volume of cooking water upon vitamin retention

VEGETABLE	COOKING WATER	RETENTION OF VITAMINS		
		Carotene	Thiamin	Ascorbic Acid
	gm.	*per cent*	*per cent*	*per cent*
Beets	250		78	
	500		53	
Cabbage	400		85	71
	700		52	47
Potatoes	200		104	
	300		75	
	550		47	
Rutabagas	300	98	86	
	550	79	52	

The palatability of dried beets was unaffected by storage conditions. In the case of cabbage only those samples stored at or below 33°F. were unaffected. At high storage temperatures the color of dried rutabagas faded, although the palatability was unaffected. The use of large amounts of water during cooking of the dehydrated vegetables brought about a decrease in carotene, thiamin, and ascorbic acid retention.

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Compression Method for Dehydrated Food Products

A method of reducing dehydrated foods so that they occupy a minimum of space by placing them under hydraulic pressure while being maintained at a very low temperature has yielded very interesting results at the plant of the Auto-Ordnance Corporation.

Physical and chemical characteristics of the product to be processed govern the extent of refrigeration and the amount of pressure to be used in arriving at the proper bulk reduction. The object of refrigeration, as it is used in this process, is to solidify fats, oils and moisture content and in general to "create a state of 'suspended animation' so that the product suffers no loss while under the influence of this 'anesthetic' during the compressing process.

"In some cases temperature may be lowered to −40° and pressure applied as high as 3,000 lbs. per sq. in. In other cases, the temperature may be around 0°F. with more or less pressure employed."

For example, by lowering the temperature of seedless raisins to around −10°F. and employing around 1,500 to 2,000 lbs. per sq. in., Auto-Ordnance Corp. engineers are able to reduce the cubic inch displacement of the raisin 50% without rupturing or otherwise injuring the tissues or losing any of the juices of the raisin. A compressed raisin cake weighing 2 oz. and measuring $1\frac{3}{4}''$ x $1\frac{3}{4}''$ x $\frac{5}{8}''$ will be firm and solid and yet permit the removal of one or two, or more, raisins independently from the compacted mass.

According to John C. Donnelly, Department of Research and Development, this work includes the processing of dehydrated vegetables, powdered milk, eggs, etc., as well as fresh roasted coffee. Where space is at a premium, such as in shipping dehydrated vegetables long distances to the armed forces, the process in question is expected to prove highly advantageous.—*Philip H. Van Itallie in Food Field Reporter, August 17, 1942.*

Rationing in Theory and Practice[1]

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RATIONING—planned and controlled distribution of goods on the consumer level—is part of total war economy. Though rationing was begun in some European countries even during the last war, the technique of distribution of consumer goods was not fully developed until after the outbreak of this war. Rationing, therefore, is a comparatively novel technique which is being constantly developed and extended. Since it is part of the controls for total war, it operates best when accompanied by control of supplies, prices, standards and distribution, and various other types of financial control.

THE PURPOSE OF RATIONING

Rationing can be undertaken for a variety of reasons: firstly, as an aid to the enforcement of price control—whether the over-all type of price control used in this country, Canada, and Germany, or the flexible type of price control favored by the British; secondly, as an anti-inflationary measure to release consumer purchasing power to finance the war; thirdly, as a technique to force the population to curtail and to reduce consumption in order to divert manpower, raw materials, and industrial plants to the production of war goods; and fourthly, to further a certain social policy. The Germans, for example, have used it to distribute foodstuffs according to their social pattern. Finally, rationing can be used as a technique to obtain equitable distribution of consumer goods when supplies decline as a result of the exigencies of war.

Experience has shown that rationing can and sometimes does increase consumption of rationed articles. In Britain, for example, consumption of cheese increased considerably after the government began to ration that "health-giving, vitamin-filled, soul-uplifting foodstuff," as they say in the advertisements. People who had never eaten cheese before suddenly discovered what they were missing. Indeed, rationing gives people the idea that they are entitled to consume the allowed quantity of each article of food and they generally endeavor to use up their ration allowances. The primary function of rationing is to assure that when the standard of living has to be reduced, the decline is spread evenly among all sections of the population, and that available supplies are distributed in a manner most beneficial to society as a whole. In brief, wealth, under such a system, enjoys no premium.

RATIONING AND PRICE CONTROL

The relationship between rationing and price control is both intimate and complex. First of all, it is obvious that effective rationing can be secured through the market mechanism of prices. It is only necessary to allow prices of milk, butter, meat, fruit, and other articles to rise sufficiently high in order to obtain reduced consumption. An increase of 100 per cent in the price of meat would probably reduce consumption by a third or more. However, this type of rationing is not only the most unfair possible; more important still, it is exceedingly dangerous financially. Inflation and financial chaos are the inevitable results of uncontrolled and rapid increases in the price of essential foodstuffs during war; the morale of the home front would suffer; production of articles of war would decline. On the other hand, rationing itself requires price control. Unless the prices of rationed goods are controlled, the population is rationed twice—once by the rationing regulations and again by price. The practice of all governments, therefore, has been to control the prices of all rationed goods, and to limit consumption by one technique only.

Rationing constitutes a most effective buttress to the price control structure. The experience of England, Germany, Italy and other belligerent countries has proved that enforcement of price control is exceedingly difficult and occasionally impossible if supplies of consumer goods fall considerably below normal demand. Sooner or later the torrent of inflated purchasing power will sweep over the artificial price dam constructed by the public authorities and destroy it. If scarce and essential commodities, the prices of which are strictly controlled, are not rationed, black markets will develop

[1] Presented before the American Dietetic Association, Detroit, October 21, 1942.

in direct ratio to the decline in supplies. In fact, the inducement to black marketing practices and to other well-known undesirable manifestations—such as favoring certain customers, selling controlled goods only to purchasers of certain quantities of other goods (the prices of which are not controlled), hiding stocks, and indulging in other anti-social trade practices—becomes so powerful when goods are not rationed that enforcement of price control becomes very difficult.

Rationing is administratively too complicated and socially too cumbersome to be embarked upon merely as an aid to price control. The fact is that all the major belligerent countries are controlling the prices of many more articles than they are rationing.[1] This is true not only in Germany, Italy, and Canada, which have the over-all type of price control, but even in Great Britain, which has used the selective system.

OTHER REASONS FOR RATIONING

The United States has operated on the theory that consumer goods should be rationed only when supplies decline below normal and essential demand. Scarcities may result in wartime from a number of causes which nullify the normal operation of the law of supply and demand. Some scarcities may result from loss of sources of supply. The Japanese conquest of the Philippines cost us, in terms of sugar, close to a million tons a year. The German conquest of Norway, Denmark, and the Low Countries removed from Britain's reach large quantities of important foodstuffs, animal feed, and industrial raw materials.

More important are the scarcities which grow out of shortage of transportation, notably of ocean transportation. Sugar and gasoline offer typical examples of shortages due to this cause.

Diversion of raw materials, industrial plants, and labor to the production of war goods constitutes another artificial cause of scarcity. Of course not all articles the production of which is terminated need to be rationed; some articles, however, are so important to the life and well-being of the community that existing stocks have to be placed in the hands of those who need them most in the service of the community. This is the principle that underlies automobile rationing, bicycle rationing, and typewriter rationing.

Rationing may also be imposed in order to cope not with an absolute scarcity but with a relative inflationary scarcity—that is, a scarcity that exists in relation to the current flow of incomes. It is conceivable that some essential consumer articles may have to be rationed although supplies are as large or even larger than in 1939–40. Comparison with "normal" supplies would, however, be of little value when dealing with the potential demand which has increased on account of the vastly expanded national income. It is very likely, indeed, that a large number, if not the majority, of the future rationing programs will be made necessary by the operation of this factor. If rationing of meats, clothing, shoes, and canned fruits and vegetables is embarked upon, it will not be due so much to the existence of absolute scarcities but to the increase in demand as a result of the increased national income.

In this country one of the most important causes of rationing has been the operation known as Lend-Lease. More food will probably be produced during 1943 than at any previous time in our history; the food production goals which are being established now by the Department of Agriculture are nothing less than breath-taking; yet we will need to ration a great number of foodstuffs. The explanation is that we are shipping immense quantities of highly nutritive foodstuffs to our allies under the Lend-Lease system. In order to save shipping we are urging Britain to abandon some of the usual sources of supply, which are located at the other end of the world, and to replace these with foodstuffs shipped from this country.

TECHNIQUES OF RATIONING

The techniques of rationing, if not unlimited, are multiplying rapidly. New techniques are constantly being discovered, old ones are being refined and made more complicated. The method of rationing has to be adapted to the commodity. It would be impossible to ration automobiles, for example, by the coupon system unless all durable consumer goods were rationed; on the other hand, to ration sugar by the method of individual permits used for rationing of automobiles, tires, and bicycles would be administratively absurd and highly inefficient. Sugar can be rationed most effectively by the simple "uniform allowance" system, or, if maximum fairness is desired, by the system known as "differential" rationing.

Under the former rationing scheme the consumer is restricted to a fixed quantity of each article for a fixed period and all consumers are allowed to obtain an equal quantity of the article. The ration allowance can be, and frequently is, changed from time to time according to the supply. The coupons are usually made valid for specified periods and if the supply is very limited, registration with retailers may be required. This system can be used with greatest advantage for articles which are in universal consumption, the demand for which is inelastic and fairly equal, and when supplies are sufficient to allow every person in the community a certain quantity.

The differential type of rationing is used when it is desired to allow various classes of the population to

obtain varying quantities of the rationed article. Certain foodstuffs and other commodities which are of special importance to specific groups—the sick and infirm, children, special types of laborers—might be rationed by this method. Differential rationing has been used extensively in Germany and Italy as a weapon of war and as an instrument for implementing a definite social and racial philosophy; these countries have sought to attract laborers to certain war occupations, notably mining and steel-making, by allowing higher rations, and to exterminate certain groups within their own countries and conquered peoples elsewhere by the denial of foodstuffs. In Italy, for example, heavy laborers are given 25 per cent more bread than ordinary consumers, while those in very heavy industries receive an additional bonus of 25 per cent. Great Britain, on the other hand, has followed a policy of providing the maximum possible ration for all civilian consumers, rather than larger rations for one class at the expense of another. The extra needs of men and women engaged in certain occupations are provided by other means, notably by factory canteens which serve food outside of the rationed allowance and the so-called British restaurants which provide reasonably good meals at very low prices.

There is much to be said for differential rationing. Unfortunately, however, differential rationing is exceedingly complicated and requires an immense staff of full-time paid officials to administer it. The needs of individuals have to be examined carefully and the complexities of administration increase with each refinement of the scheme. In other words, the more equitable the rationing scheme is, the more complicated it becomes; the greater the difficulties of administration, the more expensive it becomes and the more loopholes are opened for favoritism and corruption. It is very doubtful whether it will be necessary to develop differential rationing on an extensive scale in this country. The need for this type of rationing increases as rationed allowances are reduced closer to the subsistence level, when it becomes necessary to make special provision for special needs. It is very doubtful whether the shortage of foodstuffs will ever become so serious in this country that it will be necessary to set ration allowances near the subsistence level. As far as one can foresee we shall always have an adequate margin of safety, especially in view of the fact that only a small proportion of foodstuffs is likely to be rationed here.

This war is responsible for the discovery of a new type of rationing known as the "point" system. If the originator of this scheme could be paid dividends, he would be one of the richest men in the world by now. Indeed, in England "points" have become a second currency. Under this scheme each article which is rationed by points bears a certain point value and a consumer is allowed to "spend" in a given period a certain number of points. Both point values of articles and the number of points allowed to consumers are changed from time to time. The consumer can then spend his points in any manner he desires. For example, if he is allowed 10 points and a can of sardines costs 10 points, a can of beans 2.5 points, and a can of spinach 5 points, the consumer can use his 10 points either to buy one can of sardines, or 4 cans of beans, or 2 cans of beans and 1 can of spinach, or any other combination he desires.

The advantages of this scheme are very great. First and most important, it makes possible a very high degree of personal choice, which is exceedingly desirable, and reduces to a minimum the amount of interference with the consumer's normal buying habits. Secondly, it is very flexible, since the value of each article as well as the value of the coupons can be changed from time to time; thirdly, it does not require registration with retailers; fourthly, it does not require much administrative supervision. This technique has witnessed the greatest extension since the outbreak of the war. It has been used almost everywhere in Britain in rationing of clothing, and it has been expanded to other fields. The British authorities experimented with point rationing for distribution of canned foodstuffs obtained from the United States. The success of the scheme, and the universal approbation which it met among the British public, have prompted the authorities to expand it greatly. At present all types of canned meats, meat products, fish, fruits and vegetables, condensed milk, cereal breakfast foods, rice, sago and tapioca, dried peas, beans and lentils, dried fruits, etc., are rationed under the points system.

Another method of rationing is by money value. Each person is allowed under this scheme to purchase that quantity of the rationed article which he can obtain for a set amount of money. Meat has been rationed by value in England and the weekly ration has generally consisted of 20 to 25 cents' worth of meat a week. This type of rationing is most applicable to commodities which vary greatly in quality and in cost, as well as in their intrinsic value.

It would be manifestly unfair to set a quantity ration of meat which would permit each individual to buy, say, one-half pound of meat a week. Poor people having to purchase the lowest grades of meat would get mainly bones and meat of the lowest quality; high-income groups would be able to obtain one-half pound of solid steak and thus in reality be able to obtain more than their poorer neighbors. Moreover, such a system would make distribution very difficult, as the demand would be concentrated on the better cuts. Under the value rationing system normal distribution can be maintained and individual preference is given free play. A person

desiring to spend his ration allowance of 50 cents on a few ounces of choice cuts can do so; on the other hand, one desiring to obtain more in weight at the expense of quality, can obtain one or two pounds.

Under the "individual permit system," special permits are issued to applicants allowing them to purchase one or more of the rationed articles. These permits are given on a basis of definite regulations which normally include eligibility and needs tests. This system can be used to greatest advantage for articles the supply of which is strictly limited and the need for which is not universal. Automobiles, tires, and a number of other durable goods lend themselves excellently to this type of rationing; in Germany, however, because of the serious shortage of supplies, the individual permit system was used also for clothing, shoes, and other essential commodities. However, this system has serious inherent weaknesses, especially when simple eligibility and needs tests cannot be developed, and the Germans abandoned it for rationing of clothing. A number of factors have to be taken into consideration when determining which technique is to be used for rationing of a certain commodity. The first test which every rationing technique must meet is its suitability to the supply and demand situation. Some techniques are more restrictive than others and if a great reduction of consumption is desired certain techniques have to be used rather than others. For example, selective rationing is generally the most restrictive technique, while point rationing is the least restrictive. Rationing techniques differ greatly in the degree of flexibility they permit; and, other things being equal, it is highly desirable to provide the maximum flexibility both to the consumers and to the administration. Experience has shown that the point system is the most flexible, value rationing probably comes next, while the uniform allowance type of rationing is probably the most rigid.

A highly important test for every rationing program is whether it makes possible the greatest fairness. Uniform allowance rationing ranks low from the point of view of equitability; the same is true with regard to the point system; permit rationing and differential rationing can be given much higher ratings. Unquestionably a combination of the first and the last two types would be best. It must be recognized, however, that a rationing system which makes possible the maximum equitability will require a very extensive and efficient administrative apparatus and will be exceedingly complex in its regulations. A rationing system which is simplest to understand, simplest to explain to the public and simplest to administer, is to be greatly preferred to more complex types of techniques, unless it would give birth to an intolerable number of other evils.

PROBLEMS RESULTING FROM RATIONING

If this highly simplified exposition has shown anything, it is that rationing is exceedingly complex. Yet we have no more than touched the most superficial complexities and difficulties of rationing. It is no panacea for all ills of society. Not only is it exceedingly complex, but it must be recognized that rationing itself gives birth to a great number of problems and evils, not all of which can be solved or abolished.

Unfortunately, rationing by itself does not increase the purchasing power of everyone. Take, for example, the meat situation. The government has asked people voluntarily to ration themselves to about 2.5 lb. meat a week; and some people have prophesied that our rationing system, when it is instituted, will limit people to this amount of meat weekly. However, a study by the Department of Agriculture on per capita consumption of food by families and single individuals in 1941, shows that only those with an income above $2,000 a year consumed more than this amount per week while individuals with an income of $1,000 or under, consumed considerably less. It is all very well to allow everyone to purchase 2.5 lb. meat a week; but what are you going to do about those people—and they constitute rather more than two-thirds of the population—whose consumption never approached that figure? They will not be rationed at all; the burden of the rationing system will fall on the higher income groups. Where, then, is equitability? Moreover, the inability of the low-income groups to purchase and consume all that their ration allows might create an illegal traffic in coupons. This situation might give birth to a number of other evils.

From the point of view of those who are primarily concerned with providing an adequate diet for the American people and with discovering ways for utilizing to best advantage the money which people can spend on food, the situation raises a number of other problems. It has been asserted that more than one-third of American families are seriously undernourished, that is, the diets of more than one-third must be classed as poor. Yet it is a known fact that under normal conditions people instinctively make fairly satisfactory adjustments to changes in food supply. If we cannot get carrots, we buy another vegetable; if the price of meat goes up beyond our financial resources, we buy fish or eggs or something else. Extensive rationing, however, makes such easy adjustments impossible. If meats, eggs, dairy products, cereal products, vegetables and fruits are rationed, a person who cannot afford the more highly nutritive and expensive foods, would not be able to increase his consumption of the cheaper and perhaps less nutritive foods. His ration allowance would be determined on an over-all

national basis. Imagine what would happen if we were to ration white flour, other types of flour and various cereal products other than bread and pastries. Consumption of flour and those articles which are labeled "other" in statistical tables, is in reverse proportion to income. The lowest income groups consume, according to the Department of Agriculture figures, 264 lb. annually; families and single individuals with income of $500 to $1,000 consume 178.5 lb., but families and single individuals with incomes of $3,000 and over consume approximately 105.5 lb. It is easy to see the serious effects which extensive rationing of foodstuffs can have on the diets of low-income families.

Or take the case of sugar. Our experience with sugar rationing constitutes a bold illustration of the fallacy and danger of averages. Studies by the Department of Commerce have shown that the average per capita home consumption of sugar in the United States in 1939 was about sixty-five pounds (including institutional users). It is expected that the present rationing system will enable household consumers to obtain around forty pounds of sugar. The reduction under rationing is therefore not serious. Unfortunately, the situation is not nearly so simple as it appears. The fact is that every person in the United States did not consume 60 or 65 lb. sugar in 1939. Some people, notably city folk, consumed considerably less; inhabitants of small towns, and farmers generally, consumed considerably more. City people rarely bake their own bread and pastry; few prepare their own soft drinks; very many eat at least one meal in restaurants every day. In reality, therefore, their sugar rations are supplemented by the rations which industrial and institutional users obtain, and a ration allowance of one-half pound a week constitutes no hardship for them. An entirely different situation confronts us when we turn to that part of the population which lives in small towns and in rural communities. A ration allowance of one-half pound a week constitutes a very serious hardship.

CONCLUSIONS

Measures can no doubt be taken to cope with some of the problems revealed by this analysis. Unfortunately, it is never possible to tailor a rationing system to fit every possible circumstance and the needs of every individual. A rationing system which attempted to obtain absolute fairness would be too complicated for human management, of that I am certain.

This situation creates special problems for those of us who are primarily interested in the diets of the American people; it creates also special opportunities. Rationing constitutes a challenge to the dietitians of America and it is to be hoped that they will rise to the occasion. It is impossible to foresee at this stage how many foodstuffs will be rationed before the war is over. It must be realized that rationing has a dynamics of its own and when you start rationing a few commodities, the need to add more and more commodities to the list is frequently created. The problem, in brief, is how to utilize to the best possible advantage our available supplies.

Traditionally, the American people have been wasteful and uneconomical. They cannot be blamed for this for it has been their good fortune to live in a land of abundance and unequaled riches. They have not learned to husband resources and to make a little go a long way, and this is particularly true with regard to food. Enormous quantities of food have been wasted year in and year out. Unfortunately—or perhaps one might say fortunately—there will be no abundance for the duration. We will have to learn the meaning of frugality and conservation.

That is where the dietitians of America come in. It is their duty to help the American people to adapt their diets, food habits, and ways of cooking and eating to what may be peculiar and novel circumstances. The British have confronted the same problems, of course, in a much more acute form than appears likely for us. The war has compelled them to revolutionize all their food habits. Here, it must be admitted, dietitians, working inside and outside of the British government, have done a magnificent job. A vast amount of food propaganda has been distributed in England since the outbreak of the war. Pamphlets have been published telling the housewife how to buy wisely, how to prepare food with least loss of nutritional qualities, how to use new types of foodstuffs effectively and how to obtain variety in spite of the limited number of foodstuffs now available. The British government has published weekly advertisements in newspapers and magazines giving advice to women on preparation of food. One series of advertisements, known as "Food Facts," has been very popular and has helped British housewives to cope with the unprecedented conditions they now face. I am confident that the dietitians of America, too, will be able to meet situations as they arise and bend their efforts to procure a healthier, better-fed and better-nourished America.

PRICE OF ASCORBIC ACID

A price reduction of 25 cents per ounce for ascorbic acid was made in September by leading manufacturers, making the new price $1.25 per ounce in 1000-oz. lots; $1.26 in 500-oz. lots; $1.27 in 100-oz. lots; top price is $1.45 an ounce in 1-oz. lots. Ample supplies are expected to be available soon.—*Food Field Reporter, September 28, 1942.*

Effect of Restaurant Cooking and Service on Vitamin Content of Foods[1]

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APPARENTLY there is no published literature on this subject. As far as we know only one research study (1), other than that which forms the body of this report, has been completed. During the last five years there have been several published reports (2–5) on the effects of cooking on the vitamin content of foods, but these foods were cooked under home or laboratory conditions, circumstances of little interest in this study (6).

Large numbers of people subsist entirely on restaurant food and many more eat one or two meals daily in restaurants. Information on the destructive effects of restaurant cooking is thus of major importance. Preliminary tests on food taken from expensive restaurants, from cafeterias and from the lowest class restaurants showed that the price the customer pays has little relation to the nutritive quality of a meal.

METHOD USED IN STUDY

The data in this report were obtained during the winter and spring months of 1941–42, a season of the year when the vitamin content of vegetables is lowest. This, however, should have no influence on the *rate* of destruction of vitamins during cooking and while standing on the hot plate. In this research, the food was studied as it passed through various stages of preparation and the analytical results were calculated on the basis of fresh weight.

The study was conducted in the Graduate House of Massachusetts Institute of Technology, which serves approximately 600 persons at each meal. While the results are strictly applicable only to this restaurant, the techniques in food preparation and service were, if anything, superior to those observed by us elsewhere. The 9 vegetables studied were selected from a group of 15 which were being served at least once weekly. In each case, the first sample of the raw vegetable was collected at 9 a.m.; the second sample, as it came from the kettle or pressure-cooker; and the third, from the same lot of vegetable, was taken at 2 p.m., after the vegetable had been on the steam-table for approximately three hours. Measurements were made on the thiamin and ascorbic acid content before cooking, after cooking, and after 3 hours on the steam-table. In all cases the samples were placed in a dry ice container (−70°C.), it having first been proved that this method of procedure preserved the thiamin and ascorbic acid until the analyses were made, which was within the next 3 days. The results are summarized in Tables 1 and 2.

The methods of analysis used were as follows: Thiamin was estimated fluorometrically by the method of Hennessy and Cerecedo (7) with several modifications: the potassium chloride was not used hot nor were the Decalso (80-mesh) columns steam-jacketed; thiamin chloride (U.S.P.) was used as a standard. Samples were prepared for analysis by placing 75 gm. vegetable with 200 ml. distilled water in a Waring Blendor and disintegrating it. Aliquots of 40 to 80 gm. were then mixed with 50 ml. 0.1 normal sulfuric acid, refluxed for 30 minutes, cooled, and incubated at 40°C. for 2 hours after the addition of 5 ml. 2.5 M sodium acetate containing 0.3 gm. Takadiastase (P.D.).

Ascorbic acid estimation was based on Bessey's procedure (8). A 6-gm. sample was chopped finely, triturated with sand in 3 per cent metaphosphoric acid and centrifuged. To 25 ml. supernatant, 7 ml. citrate buffer[2] was added, then 4 ml. of the buffered extract was placed in the spectrophotometer cuvette with 4 ml. 2,6-dichlorophenol-indophenol[3] and the reading made at 4750 Å within 15 seconds. A second reading was taken after this solution was decolorized with one drop of a concentrated solution[4] of ascorbic acid in 3 per cent metaphosphoric acid. The differ-

[1] Presented before the American Dietetic Association, Detroit, October 22, 1942.

[2] 21 gm. citric acid in 20 ml. 1N NaOH (carbonate-free) made up to 250 ml.

[3] 8 mg. dye in 500 ml. hot water.

[4] The exact concentration is of no importance.

ence in readings was assumed to be due to ascorbic acid in the sample. Calculations were made from standard curves.

RESULTS AND DISCUSSION

The general findings indicate that, after cooking, the loss of ascorbic acid averaged 45 per cent while the loss of thiamin averaged 35 per cent. A large portion of the cooking loss was due to solution of the vitamins in the cooking water which was discarded. The total cooking and steam-table losses averaged 75 per cent for ascorbic acid and 70 per cent for thiamin.

It has been shown (4) that vegetables cooked by kitchen procedures lose 20 per cent of the thiamin content and an additional 25 per cent is lost in discarded cooking water. Similarly, about 15 per cent of the ascorbic acid of vegetables was reported (9) lost by destruction and 30 per cent in discarded cooking water. Our data indicate that about 20 per cent of the initial vitamin B_1 and C content was destroyed by cooking, 25 per cent more was lost in the discarded cooking water and an additional 25 per cent was lost on the steam-table, with the result that only about one-fourth of the original thiamin and ascorbic acid present in these vegetables immediately before cooking, reached the consumer. These are averaged results; study of the table shows that there are marked differences in the losses of vitamins in various vegetables.

TABLE 1

Results of thiamin analyses

VEGETABLES	MOISTURE CONTENT RAW VEGETABLE	TREATMENT AND TIME OF COOKING	ORIGINAL* (MG./100 GM.) THIAMIN			LOSS OF THIAMIN (DRY BASIS)	
			Raw	Cooked	Steam-Table	Cooking	Cooking and Steam-Table
	per cent					*per cent*	*per cent*
Beans, string	91.5	soda, 45 min.	0.070	0.057	0.038	26.00	56.00
Cabbage, red	94.9	sugar, vinegar, 60 min.	0.188	0.100	0.075	82.00	86.00
Carrots	86.3	sugar, 7 lb. steam, 10 min.	0.127	0.067	0.013	25.00	89.00
Cauliflower	89.5	6 lb. steam, 20 min.	0.092		0.029		57.00
Peas	79.2	soda, 8 min.	0.392	0.398	0.207	−54.00	66.00†
Potatoes	78.5	6 lb. steam, 20 min.	0.188	0.156	0.157	5.00	29.00
Spinach	88.5	5 min.	0.304	0.064	0.057	35.00	80.00
Squash	94.5	pepper, butter, 6 lb. steam, 45 min.	0.069	0.055		48.00	
Turnip	85.5	6 lb. steam, 30 min.	0.128	0.077	0.093	45.00	56.00

* "Original" is defined as the condition in which food was received in the laboratory, *i.e.* raw, cooked, or steamed.

† Cooked sample taken as 100%. Higher vitamin content found in samples after cooking indicates analysis of raw vegetable was low.

TABLE 2

Results of ascorbic acid analyses

VEGETABLES	MOISTURE CONTENT RAW VEGETABLE	TREATMENT AND TIME OF COOKING	ORIGINAL* (MG./100 GM.) ASCORBIC ACID			LOSS OF ASCORBIC ACID (DRY BASIS)	
			Raw	Cooked	Steam-Table	Cooking	Cooking and Steam-Table
	per cent					*per cent*	*per cent*
Beans, string	91.5	soda, 45 min.	2.22	2.25	1.10	9.00	61.00
Cabbage, red	94.9	sugar, vinegar, 60 min.	6.81	1.12	1.69	95.00	91.00
Carrots	86.3	sugar, 7 lb. steam, 10 min.	1.02	0.35	0.09	51.00	90.00
Cauliflower	86.8	6 lb. steam, 20 min.	2.86	4.97	4.90	−61.00	64.00†
Peas	75.0	soda, 8 min.	3.60	3.58	0.16	2.00	96.00
Potatoes	78.5	6 lb. steam, 20 min.	0.45	1.21		−68.00	
Spinach	88.5	5 min.	1.98	0.37	0.14	77.00	93.00
Squash	91.4	pepper, butter, 6 lb. steam, 45 min.	2.01	0.92	0.15	58.00	95.00
Turnip	80.2	6 lb. steam, 30 min.	7.62	10.60		−13.00	

* "Original" is defined as the condition in which food was received in the laboratory, *i.e.* raw, cooked, or steamed.

† Cooked sample taken as 100%. Higher vitamin content found in samples after cooking indicates analysis of raw vegetable was low.

In an article soon to be published, Goodhart (1) reports the results of a study of 3 luncheons served in the cafeteria of a large war industry plant. These luncheons were analyzed and the results compared with calculations based on data taken from the literature for the constituent foods. One luncheon was a "special" served daily to a significant portion of the customers, the second was "selected" by Dr. Goodhart from the menu in an effort to get a good meal and the third was a "special modified" luncheon containing raw salad, whole wheat bread and yeast extract.

Results of these analyses in comparison with reports in the literature on the vitamin potencies of the foods in the meals studied showed a 92 per cent loss in the thiamin content of the food in the "special" and an 82 per cent loss in ascorbic acid content. The "selected" menu showed a 52 per cent loss in thiamin and a 40 per cent loss in ascorbic acid, while the third showed a 36 per cent loss in thiamin and a 30 per cent loss in ascorbic acid. These losses took place during the preparation and serving of the foods.

In general, the present results agree with those reported by Goodhart. In this study, in disagreement with Goodhart, the ascorbic acid losses were higher than the thiamin losses. This may be because Goodhart's menus contained uncooked items rich in vitamin C. Furthermore, Goodhart assumed the initial vitamin content of the cooked foods analyzed by him to be the same as that reported in the literature for like foods. That this assumption is unwarranted is indicated by the data on fresh foods in this report. These values are generally lower than those previously reported. Had calculations been based on the literature, rather than upon data obtained on samples of the same foods before cooking, the conclusions would have been even more discouraging.

The data here reported and those obtained by Goodhart both indicate that there is a surprisingly extensive destruction of vitamins in foods cooked in restaurants, and it is evident that those restaurant customers who eat during the early part of the meal-serving period and eat more raw vegetables, salads and foods which are not submitted to cooking procedures will be better fed. The restaurateur cannot be expected to change over to short-order cooking, but he can be taught why it is advisable to cook food carefully and not too far in advance of mealtime. Research is needed to determine the best methods of cooking in large establishments and best methods of keeping food warm until it reaches the consumer. More extensive studies of the type reported here are needed to determine whether the problem is really as serious as this isolated investigation indicates.

CONCLUSIONS

Surprisingly high losses in ascorbic acid and thiamin take place when foods are cooked and served under restaurant conditions. In some cases these losses exceed 95 per cent of the vitamin B_1 and C content of the vegetables just previous to cooking.

All efforts of restaurateurs to improve the quality of meals by selecting high quality vegetables may be undone by improper handling of foods in restaurant kitchens and on steam-tables.

Research in collaboration with large restaurants should be undertaken to study ways in which these destructive effects may be minimized and this information widely disseminated.

It is especially important that those eating in restaurants consume liberal amounts of foods which receive little or no heat treatment in restaurant kitchens prior to service.

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Metal and Fiber Containers for Food During the Present Emergency[1]

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CONDITIONS imposed by the present emergency make it imperative that containers for essential foods be supplied in quantities appreciably greater than those required in peacetime. At the same time the vitally important materials used in the manufacture of metal and composite containers—tin, steel, rubber, certain organic coating materials—must be conserved.

The required conservation is being accomplished by elimination of non-essential items and by the use of substitute materials in the containers.

LIMITATIONS ON USE OF TIN

The first step toward tin conservation, taken by the OPM on May 2, 1941, and of course prior to our entry into the war, was the reduction in weight of tin coating from 1.5 to 1.35 lb. per base box (pot yield basis; one base box represents a surface of 31,360 sq. in.) for all but the most corrosive food items packed in tinplate. Further reduction to 1.25 lb. per base box came about as a part of the second and more drastic step in the conservation of tin taken by the War Production Board through WPB Order M 81, originally issued February 1, 1942 and amended June 27, 1942. Research had shown that with the use of the low-metalloid types of sheet steel made available by the cold reduction process for rolling sheet steel, a 16.6 per cent decrease in tin coating weight would not shorten the service life of the tinplate can appreciably or produce any adverse effect on the products packed.

Thus, Order M 81, regulating the manufacture and use of tinplate and terneplate cans, was designed to accomplish, in addition, the following:

1. Complete or partial elimination of the canning of products considered to be non-essential.
2. Elimination of the packing of products normally obtainable at all times in a suitable form other than the canned product, and also products for which the basic ingredients could be obtained in bulk and preparation completed in the home.
3. Elimination of all sizes of cans below the #2 can (307 x 409) with a few exceptions for certain products.

DEVELOPMENT OF SUITABLE SUBSTITUTES

Although the tin conservation order was very effective, it was evident that further reduction in the use of tinplate would be required in order to reduce the annual tin consumption to that which appears necessary on the basis of the available tin supply. Research and development during recent years have provided a means of accomplishing further conservation which it is hoped will make unnecessary the undesirable alternative of additional restriction of items on the permitted list of canned products. It has been found that electrolytic tinplate, having a weight of tin coating one-third or less than that of the usual hot-dipped tinplate, and bonderized steel (steel treated chemically to produce a surface phosphate coating) having no tin coating can be substituted for hot-dipped tinplate in many cases.

The conservation program now being applied to the tinplate can involves the gradual substitution of electrolytic tinplate and bonderized steel for the conventional hot-dipped plate. This substitution must be gradual to allow the new equipment for the manufacture of bonderized steel and electrolytic tinplate to be put into operation, and to allow the can manufacturing industry to build additional coating equipment and make other can manufacturing equipment additions and modifications necessitated by the use of bonderized steel. Preliminary tests have been completed, and an experimental program is now in progress to determine for every essential canned food item the extent to which the substitute plates can be employed.

The stages in the progressive program of tin conservation applying to food containers as projected by the can manufacturing industry[2] may be summarized as follows:

1. Limitation of can sizes and use of 1.25 lb. tin coating per base box on hot-dipped tinplate for all except the most corrosive food products; and the use of 1.5 lb. hot-dipped tinplate for highly corrosive food products.
2. Electrolytic and bonderized steel used in can ends where possible.

[1] Presented before the American Dietetic Association, Detroit, October 21, 1942.

[2] Lueck, R. H: Wartime changes in metal containers. Food Industries 14: 57, 1942.

3. Bonderized plate in can ends and electrolytic plate in both bodies and ends where possible.
4. Bonderized and electrolytic plate in both bodies and ends where possible.

Bonderized steel is a new material in can manufacture, although the bonderizing process has been used in other industries for a number of years.

A steel surface properly treated by the bonderizing process (patents owned by the Parker Rustproof Company) is left with a coating of mixed crystals of zinc and ferric phosphates. The use of bonderized steel in sheet steel and can manufacture has been made possible by the development of a procedure requiring only a few seconds' time for treatment of the plate and producing a coating suitable for fabrication of the steel after treatment. Up to the present time other methods for producing a phosphated surface on sheet steel have not been found to be equal to bonderizing when considered on the basis of all requirements involved in can manufacture.

Bonderized steel, as well as other surface-treated or untreated steels, must have an organic coating to provide protection against either atmospheric or sub-aqueous corrosion. The purpose of the bonderizing treatment is the creation of a better base for the organic coatings which are designed to provide corrosion protection. Bonderizing will prevent the development of underfilm corrosion, hairline rust formation, which develops under organic coatings applied to untreated steel surfaces when exposed to the atmosphere. Although bonderizing does not prevent rust formation on an uncoated surface, the rate of development is retarded, a beneficial effect in minimizing the corrosion of uncoated steel sheets during the period between manufacture and application of a suitable organic coating.

Within the can the effect of bonderizing the steel surface is to prevent loss of the adhesiveness of the organic coating, particularly during the thermal sterilizing process. Loss of the adhesive properties of the organic coating is followed by rapid corrosion of the steel, resulting in the early development of hydrogen swells, product discoloration, and flaking off of particles of the enamel lining of the can. Although dry food products not given a thermal sterilizing treatment can be packaged successfully in cans made from untreated steel, cans for heat-sterilized foods require the use of bonderized steel.

Cans made from bonderized steel properly coated and properly packed can be expected to have a satisfactory service life for most food products having a *p*H value of 5.5 or higher. The foods are not affected adversely and while the iron content of some of the products may increase slightly during long storage, the quality and nutritive value of the food will not be impaired. Bonderized steel cans have not been found satisfactory for foods having a *p*H below 5.0. Experiments are now in progress to determine whether bonderized steel can be used with foods in the *p*H range of 5.0 to 5.5. Conflicting results were obtained in the previous test packs made with foods representative of this *p*H range.

Electrolytic tinplate is manufactured by the electro-deposition of tin on sheet steel. This method permits the uniform application of coatings as low as 0.1 lb. per base box. The hot-dipped process cannot be used satisfactorily for the application of tin coatings averaging less than 1.2 lb. per base box.

During the early stages of the tin conservation program the electrolytic tinplate used for can manufacture will have a tin coating weight of 0.5 lb. per base box, that being the lightest on which canned food corrosion studies have been made. Further tests may indicate that this coating weight can be reduced for certain uses. The use of the light-weight coatings necessary to effect a substantial saving of tin will make the corrosion resistance of electrolytic plate greater than that of bonderized steel, particularly in the acid foods, but it will not be so great as the corrosion resistance of hot-dipped plate having a tin coating of 1.25 lb. per base box or more.

Although plain electrolytic plate having light-weight tin coating has not been found satisfactory for use in the manufacture of cans for acid foods, or foods requiring thermal sterilization, experiments have shown that when the same electrolytic plate is enameled, commercially satisfactory containers for many food products can be manufactured, including a number of foods in the *p*H range of 5.0 and lower. The tin conservation program plans include the use of electrolytic plate on all food products for which bonderized steel cans cannot be used with the exception of a few foods in the most corrosive class, such as berries, cherries, and fermented and pickled foods. There is some evidence to indicate that cans made from electrolytic plate having tin coating weights near 0.9 to 1.0 lb. per base box may prove to be sufficiently satisfactory for use with these highly corrosive products under the conditions of the present emergency.

Although the resistance of 0.5 lb. electrolytic tinplate toward atmospheric corrosion is not so great as that of hot-dipped tinplate, the outside of electrolytic tinplate cans will not be enameled for ordinary service.

The progress of the application of electrolytic tinplate and bonderized steel in food cans is indicated by WPB Supplementary Order M 81A issued June 13, 1942, covering the use of tinplate and blackplate for cans for designated products. This order lists one group of canned products, the canner of and the manufacturer of cans for which shall utilize a percentage of cans with ends bearing tin coatings not greater than 0.5 lb. per base box. Among the products listed are asparagus, green and wax beans, fish and shell-fish with certain exceptions, beets, carrots, carrots and peas, spinach and other green

leafy vegetables, and frozen foods. The order lists another group of products for which a percentage of cans are to be manufactured, using either bonderized steel or 0.5 lb. electrolytic tinplate for the ends only of cans with soldered side seam. Products listed are Lima beans, green soy beans, peas, corn, succotash, and meats except chili con carne.

With regard to the conservation of tin used in solder by the can manufacturing industry, a suitable substitute for use with electrolytic or hot-dipped tinplate appears to have been found in a solder composed of 2.5 per cent silver and 97.5 per cent lead. A suitable substitute solder for use in soldering bonderized or deoxidized steel has not been developed as yet, so that at present can manufacturers will have to use solder relatively high in tin on steel cans.

Satisfactory substitutes for the imported drying oils and certain natural resins no longer obtainable for the manufacture of protective coating can enamels have been developed from domestic and South American materials.

In view of the existing rubber shortage, a drastic reduction is being made in the rubber content of the sealing compounds used in lining the end seams of food cans. The development of sealing compounds containing no natural or synthetic rubber is now in progress.

WPB Order M 136 now restricts the use of blackplate cans, so that under the present rulings steel cannot be used to produce cans for the food items eliminated by the tin conservation orders with the exception of a limited number of fiber cans having steel ends, for baking powder. These restrictions, together with Orders M 104 and M 119 restricting the use of metal closures and rubber gaskets on glass containers, have accelerated conversion to fiber containers for food products that do not require a sterilizing process.

Fiber containers suitable for packaging nonprocessed foods and which can be handled with equipment formerly used for filling and closing metal cans are now being developed. Containers of this type will aid in meeting the need for a substitute container and will also aid the packer by minimizing the difficult problem of obtaining new packing equipment.

The development of suitable containers for dehydrated foods has been receiving special attention, in cognizance of the important role that will be played by dehydration in the conservation of food during the war and the post-war recovery period. Almost all of the dehydrated foods produced or to be produced in this country in the near future will be taken for military and Lend-Lease use in relatively large containers constructed and packed in accordance with specifications established by the government purchasing agencies. It is probable that our domestic demand will increase, so that when the production of dehydrated foods has increased sufficiently to supply such products for civilians as well as for military and Lend-Lease purchase, packages will be needed in sizes and constructions suitable for home use.

A package for dehydrated foods should protect the product from the attack of agents such as water, moisture vapor, oils, odors, insects and rodents. It is also highly desirable to be able to vacuum-pack or gas-pack the container to preserve the vitamin content of the dehydrated product and to minimize deterioration due to oxidation.

These requirements are met quite adequately by the hermetically-sealed metal can. Although the restrictions may be changed in the future, the present steel and tin conservation orders permit only #10 size cans or larger for the packing of dehydrated vegetables, not including dried legumes. These cans would be too large for home use. They would hold enough dry product for a large number of servings, so that after opening, a large part of the contents would be subject to deterioration by exposure to air for an appreciable period of time before use. Containers in smaller sizes would be desirable, and in view of the possible lack of small metal containers for dehydrated foods, the possibility of making greater use of new types of fiber containers for dehydrated foods of a type not requiring the maximum protection afforded by the hermetically-sealed container is being investigated.

Fiber cans meet many of the requirements for dehydrated food packages, but do not permit vacuum or gas-packing and are not entirely resistant to rodent and insect attack or to the action of gases.

Container studies are now in progress to determine the effect of fiber and various other types of packages on many dehydrated foods. These studies should indicate the extent and type of packaging protection required for each product to prevent avoidable loss in nutritive value and minimize loss of quality with regard to such factors as color, appearance, odor and flavor.

CONCLUSION

On the basis of our present information, metal and fiber containers for the essential foods should be available in sufficient quantity during the emergency period. Apparently factors other than the food container supply, such as the extent of food production, available food preservation equipment (other than containers), and volume of military and Lend-Lease purchases will determine the amount of packaged food available for civilian use during the coming year. The conservation orders issued from Washington are all directed toward assuring the greatest possible use of supplies available.

Editorial

AFTER TWENTY-FIVE YEARS

On December fifteenth, 1942, just as the 77th Congress ended a momentous two years, a telegram was received from Evelyn Anderson, chairman, Legislative Committee, American Dietetic Association, to this effect: "House approved Amendments. Bill on way to President."

Previously Miss Anderson had wired that the Edmiston Bill, HR 7633, described on page 830 of this JOURNAL for December, had passed the Senate and been referred to the House on account of the Amendments. Military status for dietitians may now be considered an accomplished fact. Today, after twenty-five years, definite military rank with its rights and privileges is theirs. No longer, as in 1917 when dietitians entered Army service for the first time, need they serve under the anomaly and handicap of civilian status.

Only those who served amid the hazards and difficulties overseas in the first World War can fully appreciate what this will mean to the morale and effectiveness of the many dietitians who are now in Army service, especially those who have courageously volunteered for overseas duty. Like the nurses before them, dietitians clearly have earned their rank else the measure would not have been approved by the War Department.

The event is a cause for rejoicing, for the provisions of the bill may have an implication far deeper than appears at first. The material advantage of the protection which military status affords, perhaps, is most important at the moment, but the acceptance of professionally trained women on the basis of commissioned officer rank cannot fail, in time, to influence consideration of certain reclassifications of status in civilian life, once the war is won. The passage of the Edmiston Bill is, indeed, an important event in the history of the dietetic profession.

PROTEINS IN NUTRITION

Recent comment[1] points out that the present tendency is to magnify the position of the vitamins in nutritional teamwork to the extent that other dietary co-essentials are thrown out of their proper perspective. "Yet protein is just as necessary for life as vitamins perhaps and even more so because more of it is required to maintain health and efficiency." Especially timely under the circumstances, and particularly so now that animal sources of protein will be restricted, is the up-to-date and complete summary by Lewis[2], excerpts from which follow:

Today, more than a century after Mulder, who characterized them as "unquestionably the most important of all known substances in the organic kingdom," the proteins are still "first" in the regulation of vital processes, and disturbances in their metabolism are associated with nutritive failure and with many pathologic conditions with which the physician is confronted.

Proteins are normal constituents of all animal cells and body fluids with the exception of the bile and the urine. They are essential components of both the protoplasm and the nucleus of the cell; hence they exert a profound influence on growth. They are important in the regulation of osmotic relations between cells and intercellular fluids and between tissues and blood, and play a significant role in the fluid balance of the body. Many of the best characterized enzymes have been obtained in crystalline form and have the properties of proteins (the "protein enzymes"). A considerable number of the chemical regulators of the body, the hormones, are either proteins (the so-called protein hormones) or derivatives of proteins. Many of the substances associated with immunologic and antigenic reactions and similar phenomena are known to be proteins.

Certain units or amino-acids present in the protein molecule are considered of especial importance in the structure of tissue (growth) and are commonly designated as the essential amino-acids. The chemical nature of these essential units, in particular, is discussed by Lewis[2], the formulas of others may be obtained from standard textbooks on biologic chemistry.

If it is remembered that the protein molecule is much larger than that of the peptide, that native proteins vary greatly in the amounts of amino-acids

[1] Editorial, J. A. M. A. 120: 126, 1942.

[2] Lewis, H. B.: Proteins in nutrition. J. A. M. A. 120: 198, 1942.

which they yield on hydrolysis, and that some linkages other than the simple peptide linkage almost certainly occur in the protein molecule, it is evident that the possible number of different proteins as they exist in nature is almost infinite. This individuality of natural proteins finds expression in the so-called "specificity of the proteins." This may be most simply defined by the statement that every species tends to construct within the organism a protein characteristic of that species. Thus, casein of cow's milk is believed to differ from casein of goat's milk; protein of beef muscle, from that of pork muscle; and serum protein of human blood, from serum protein of beef blood. While the basis of this specificity is undoubtedly chemical and is related to the possibilities of isomerism, this cannot be proved at present. The specificity of proteins of different biologic origin for the present must be demonstrated by biologic reactions, by the reactions observed when "foreign" protein is introduced into the organism. The phenomena of anaphylaxis, of antibody formation, of food allergies and of many other antigenic and immunologic reactions are all manifestations of this biologic specificity of the proteins.

The proteins of the foodstuffs, large molecules with colloidal properties, do not diffuse readily through biologic membranes. The process of digestion, which includes the coordinated action of a group of biologic catalysts or enzymes, effects a rapid and complete hydrolysis to the soluble and diffusible amino-acids. Since biologically the amino-acids are nonspecific, digestion results in the loss of the biologic specificity of the proteins; if this were not the case, large amounts of "foreign" protein would normally enter the blood stream from the alimentary canal, and food allergies of protein origin would be of very frequent occurrence.

The products of the digestion of proteins, chiefly the amino-acids, enter the portal blood on absorption from the intestine and are distributed to the tissues by the systemic blood. One of three fates awaits the amino-acids which then enter the cell. The first is condensation with other amino-acids, selected by the particular tissue in question from the pabulum supplied to it by the blood, to form the protein characteristic of that particular tissue or cell. This specific synthesis, the converse of digestion, makes possible the maintenance of the individuality of the cell. This process acquires a particular significance in young animals in which building of new tissues, growth, must occur for normal development and in the adult in normal pregnancy and lactation. A second metabolic path is utilization of the amino-acids for some special purpose in the animal economy apart from the general synthesis of cellular protein. The details of the reactions which lead to the synthesis of such specialized proteins and protein derivatives are not as yet clearly understood.

After the needs of the cells for these two purposes have been met, an excess of amino-acids may still remain in the cells. The fate of this amino-acid fraction is deamination—removal of the nitrogenous portion of the molecule—and utilization of the non-nitrogenous portion, since in contrast to fat and carbohydrate, storage of protein or amino-acids for any considerable time does not appear to be possible. The nitrogenous fraction of the molecule, split off as ammonia, is rapidly converted into urea under normal conditions and is eliminated in this form by the kidneys. Whether the non-nitrogenous residue is converted to dextrose for utilization in that form, depends on the chemical structure of the original amino-acid. In general, one may say that about half of the amino-acids present in the molecule of any individual protein may give rise to dextrose in intermediary metabolism.

Rose's most recent classification lists threonine, leucine, isoleucine, lysine, histidine, tryptophan phenylalanine, methionine, and arginine as the amino-acids essential for growth of the white rat. The function of the so-called essential amino-acids, other than for the construction of new protoplasm, is not clear. It seems probable, however, that most of the amino-acids which are required for growth will be demonstrated to be essential for the maintenance of adult animals.

The problem of the amount of protein which is essential or optimal in the diet of man has received much study. It is usually accepted that luxus consumption of protein over prolonged periods is of no permanent value to the adult organism (a pleasing thought now that meat is to be rationed), since in contrast to fat and carbohydrate, protein and its building stones, the amino-acids, are not stored. If the dietary protein of a normal adult is adequate, the nitrogen of the diet (chiefly protein nitrogen) is equal to the nitrogen of the excreta (mainly the nitrogen of the urine). If increased amounts of protein are added to the diet of such a person, there is a sharp increase in the nitrogenous waste products of the urine (largely urea, derived from protein catabolism), and within a relatively short time nitrogenous equilibrium is again obtained but at a *higher level of excretion*. When the nitrogen excreted is greater than the dietary nitrogen, a condition of negative balance is obtained. This indicates an inadequate intake of dietary protein or an excessive breakdown of body protein associated with disease.

Outstanding among the pathologic conditions which have been associated with prolonged ingestion of a diet inadequate in its protein content is nutritional edema (known also as war or starvation edema), which has been observed clinically in Europe, in the Orient and in the United States and can be produced experimentally in animals maintained on a low-protein diet. The continued ingestion of the low-protein diet results in low levels of plasma protein (particularly the albumin fraction),

and the resultant lowering of the "effective" osmotic pressure of the plasma is believed to be the cause of the edema.

This discussion indicates the desirability of caution in the selection of a standard protein level for national nutrition. Extremes are to be avoided. The recently adopted standards for national nutrition, as proposed by the Food and Nutrition Board of the National Research Council, provide for 70 gm. protein a day in the diet of a man weighing 70 kg. and 60 gm. dietary protein for a woman weighing 56 kg. Estimates of the increased requirements for protein during pregnancy and lactation vary greatly. The protein requirement per kilogram of body weight is high in infancy and decreases as growth occurs until after puberty, when the adult requirements only are necessary. The desirable amount of dietary protein is estimated to vary from 4 gm. per kilogram a day at 1 to 3 years, to 2 gm. at 17 to 18 years. The necessity of protein with high biologic value, such as the proteins of milk, during the period of active growth can hardly be overemphasized. That increased muscular activity necessitates a larger intake of protein is as yet unproved. Traditionally the diet of highly trained athletes and of laborers engaged in hard work, whose calorific requirements are high, contains much meat and supplies large amounts of protein.

Animal proteins usually have a greater biologic value than do the proteins of vegetable origin. It is timely to re-emphasize, too, that when the diet is derived exclusively from plant materials, more protein must be eaten. A notable exception is gelatin. This protein, a product of food technology and derived from collagen, completely lacks at least two essential amino-acids, valine and tryptophan, and contains little tyrosine and cystine, amino-acids which, while not essential, may be important in nutrition. Gelatin supplies a mixture of amino-acids, which is inadequate if used as the sole or chief source of these tissue-building stones. Also timely is the comment of Lewis that the consideration of the total calorific value of the diet is of special importance when the diet is low in its protein content. Diets of high calorific content usually contain liberal or large amounts of protein.

Since foodstuffs which are important sources of protein are seldom consumed in the raw state, possible changes due to heat must be considered. The biologic value of the protein of certain legumes is believed to be increased by cooking; that of some other proteins (meat, casein and milk products), lowered by heat. Whether such changes are sufficiently extensive to be of practical significance remains to be determined. The experiments of Schoenheimer in which isotopic nitrogen (N^{15}) has been used as a marker, indicate that a "rapid and continuous chemical regeneration of the cell proteins is a general characteristic of living matter," but despite this striking and continuous chemical activity of the organ proteins it is believed that these processes "lead to no final quantitative or qualitative changes" in the composition of the tissues. While the observations of Schoenheimer and his group are of great physiologic significance, it is not believed that at present they suggest any changes in the current practices of dietetics so far as concerns protein.

Three problems remain to be solved: which amino-acids must be present in the food; how much we require of each; and to what purpose. Today, after more than a decade of intense interest and research in protein metabolism, these questions still epitomize the problem of the role of proteins in nutrition. When they can be answered exactly, the role of protein in the diet will be known, and one will be able to determine the dietary value of every mixture of proteins in natural foodstuffs.

KEEPING ABREAST OF NUTRITION RESEARCH

At a nutrition refresher course in Indianapolis in September, Dr. Amy I. Bloye, head of the Food and Nutrition Department, Purdue University, listed some of the aspects of nutrition research with which nutrition workers need to keep in touch and summarized a few of the outstanding findings.

Vitamin research, of course, heads the list, followed by changes in the figures for mineral requirement based on recent investigations in mineral metabolism, possibilities of producing food of more uniform or of any desired composition, fortification of food, relation between diet and aging, borderline states of malnutrition, food habits and how to change them, and influence of processing on food values. In regard to research in the last-named field, Dr. Bloye remarked that "We have been studying losses in cooking at least since 1919, when Dr. Minna C. Denton reported on changes in food value of vegetables due to differences in methods of preparation and cooking.[1] But the seriousness of the situation was not realized until the present war brought about shortages of food. It was estimated that in 1940 in Great Britain, 650,000 kg. ascorbic acid were lost in the preparation of vegetables.[2] This amount would have been sufficient for the whole population if it could have been distributed evenly. The loss in the case of cabbage was divided in this way: from garden to market, 40 per cent; discarded in refuse, 20 per cent of remainder; destroyed in cooking, nil; lost in solution, 65 per cent; remaining, 17 per cent of original. The effect of processing on the nutritive value of food was covered very completely by Dr.

[1] Denton, M. C.: Changes in food value of vegetables due to cooking. J. Home Econ. 11: 143, 1919.

[2] Pyke, M.: Vegetables as food. Nature 147: 513, 1941.

Vail in an article in the September 1942 JOURNAL.[3] Those interested in this phase of the subject should consult also a paper by Dr. Ruth Cowan Clouse in the same issue, in which are compiled recent data on mineral and vitamin values:[4] also a lengthy bulletin issued by the U. S. Department of Agriculture."[5]

Dr. Bloye said that nutrition workers are not making use of all the available knowledge and are in the same position as the farmer who wrote to his state college, "Don't send me any more bulletins on farming. I am not using half of what I already know." How nutrition workers can make better use of the findings of research is suggested in the following: "I find that a few illustrations from this mass of material are always of interest to nutrition classes. For instance, to illustrate the relative ascorbic acid content of oranges when prepared in different ways, if we let 100 represent the value of the whole orange, then 65 would be the value of the juice unstrained, and 45 the strained juice. When fresh spinach is stored at room temperature for three days, it loses one-half its vitamin C value; when stored in the refrigerator, it loses very little. In baking whole wheat bread there seems to be a 15 to 16 per cent lost of thiamin. In toasting, bread loses 10 to 25 per cent of its thiamin, depending upon the depth of color. When foods are allowed to stand to cool and then are reheated, as in the case of leftovers, there is considerable loss in vitamin value. However, in my opinion, it does not follow that one should therefore throw away all leftovers, a procedure advocated at a recent nutrition meeting! We still have need of calories, protein and minerals which the left-over food could supply.

"Many of our old rules for buying and preparing food will need to be changed in the light of our newer knowledge. We will now buy fresh vegetables only when they are fresh, in small amounts, and keep them cold; we will keep frozen fruits and vegetables in the frozen state until put into the cooking water or serving dish; we will cook vegetables in their skins when possible, will avoid soaking, discarding outer leaves, stirring while cooking, using soda, mashing while hot; we will cut, chop or grind food just before cooking or serving; we will cook in a small amount of water whenever possible, starting the food in boiling water, cooking as short a time as possible, and then using the cooking water."

[3] Vail, G. E.: The effect of processing upon the nutritive value of food. J. Am. Dietet. A. 18: 569, 1942.

[4] Clouse, R. C.: Compilation of recent data on mineral and vitamin values of foods. J. Am. Dietet. A. 18: 553, 1942.

[5] Booher, L. E., Hartzler, E. R., Hewston, E. M.: A compilation of the vitamin values of foods in relation to processing and other variants. Circular No. 638, U. S. Dept. Agric., 1942.

Current Comment

FOOD SERVICE ASSISTANTS

DORIS JOHNSON[1]

Nowadays we hear of more and more people being trained as nurses' aides, women who can relieve nurses of much of their routine work. Dietitians, too, have much routine work that can be done by less experienced people, if properly trained. With professional service at a premium, means will have to be found to free the dietitian from the more simple and routine tasks so that she may more effectively carry a wider scope of responsibilities now that the number of dietitians in civilian institutions is becoming less.

Our experience with the food service assistant on the wards has been quite satisfactory. Dietitians have been relieved of such routine duties as making inventories and orders of daily supplies and weekly orders of supplies and equipment. The assistant can do many things such as keeping the tray cards in order, keeping census records, and numerous other office tasks depending upon the set-up of the service.

A food service assistant can be held in reserve for cases of emergency when regular employees fail to appear for work or when accident or illness occurs. She can break in new maids, so that the uniform teaching of the maids may continue with the least interruption in departmental routine. Incidentally, the assistant should know every maid's job in the department and be able to apply herself to any task. Her relationship with the maids should be such that she can direct their work, thus relieving the dietitian of the job of checking up continuously on the cleanliness of equipment, dishwashing, etc., and the proper use of supplies and equipment. The dietitian then need make only occasional checks to see that the proper standards of cleanliness are being maintained.

The food service assistant should be sufficiently well trained so that she can check out-going trays and relieve the dietitian of this chore when necessity arises or when the dietitian is off duty. She will, of course, have to be taught a few basic principles about diets and tray service in order to be properly fitted for this work. Where there are no student nurses, the food service assistant can relieve the dietitian of much of the work ordinarily allotted to the student nurse, such as the preparation of nourishments, tube feedings, the weighing of food for diets, the checking of night supplies for the ward pantries, and similar tasks.

A food service assistant with some artistic talent is invaluable. She can help in the making of posters and illustrative material to be used in the hospital, the outpatient department, and for teaching of

[1] Nutrition Department, Presbyterian Hospital, New York.

nutrition classes, and she can be of assistance in the making of favors for holiday trays.

In a small hospital where there is only one dietitian, whose work is therefore heavy and varied, the assistant can be especially helpful. In addition to the many responsibilities already suggested, since the dietitian in the small hospital must carry the burden of department records and other office work, the assistant can be trained to perform many of these tasks. In many instances she can be sufficiently well trained to act as a substitute when the dietitian is off duty.

In the main kitchen, for instance, a food service assistant can take care of telephone calls, tally orders from the wards or units, and make out various total sheets, again depending, of course, upon the system used in the kitchen. In a unit in which private patients are served and a selective menu is used, she can do the totaling of the orders from the patients and make out the order sheet and charges. When the dietitian must do this work it usually means that her time is being dissipated in routine tasks at the expense of skilled supervision and teaching.

These suggestions should bring to mind many other ways in which a food service assistant can be employed in a specific unit where the dietitian's time is heavily engaged. She will find that she will be more than repaid for the time devoted to the training of an assistant.

The prerequisites of the job as food service assistant should include at least a high school education, and where possible the added advantage of clerical or office experience. The young woman selected for such training should possess good judgment, be trustworthy, and able to adjust well to people. She should be able to take orders, and be adaptable to change since her responsibilities may be varied. Often an exceptionally good maid can be promoted to the position of food service assistant. If so, her salary should be increased sufficiently so that she will sense the responsibility of her position.

Now that volunteers are eager to aid in the emergency it is not only possible, but urgently necessary that some of them be trained as food service assistants. Even though but a few hours a day of their time is available, such help will do much to release the dietitian for the important tasks of supervision and teaching for which she alone is qualified.

A SOURCE GUIDE FOR THE DEVELOPMENT OF MEAT SPECIFICATIONS

In an attempt to compile a model set of specifications for meat purchasing, a subcommittee of the Administration Section of the American Dietetic Association, 1941–42, under the chairmanship of Adeline Wood, made a study of the specifications in use in various public and private institutions, as submitted by members of the Association through their state presidents, and of the sources from which these specifications were taken.

Written specifications were submitted by dietitians in 31 hospitals and other institutions and 8 colleges and schools; information on questionnaire forms was furnished by dietitians in 39 of the former and 18 of the latter type of institution. Certain general features were noted in the material submitted. For example, minimum and maximum weights were generally indicated in all specifications and were frequently indicated for classes and grades in situations in which carcasses, sides and quarters were used. Packers' brands and federal standards of terminology were generally used and frequently both were indicated in the same specification. (The Standard Beef Grading System, *see* reference 12, was used in 2 of the 96 specifications submitted.) Class was especially indicated in specifications for beef, *i.e.* steer or cow; style of cut was usually given in terms of bone structure; and degree of trim was most frequently indicated in terms of measurements. In the written specifications credit for aid was frequently given to government sources. In several instances, certain details were omitted or indefinitely stated in the information received. For example, specifications for health and sanitation (*i.e.* inspection and grading requirements), bidding and payment terms and delivery requirements, especially as to acceptance and rejection, and style of packaging were seldom if ever included. Detailed requirements were notably vague in respect to the following: type, *i.e.* fresh, chilled or frozen; class, for lamb and veal; and quality or grade, style of cut and degree of trim, for specific cuts.

It was apparent from the material submitted that preparation of a model set of specifications for meat purchasing, to be of material aid to all members, would necessarily incorporate hundreds of items in order to be sufficiently adaptable to the needs of each particular situation. Therefore a source guide was outlined (in lieu of a model set of specifications) which could be used in the development of specifications for meat purchase according to the needs of the individual institution. A list of source materials is appended, including reference to written specifications as submitted by the members of the Association participating in the study, which should serve as a guide in the development of specifications pertinent to a given situation. The accepted fundamentals for meat specifications are listed; namely, (1) regulations, (2) purchasing policies, and (3) details of requirements, including the most common variations as indicated in the specifications submitted—along with the reference numbers to the bibliography which follows. All sample individual specifications, as submitted by the participating dietitians, are on file in the Business Office of the Association in Chicago. Numbers appearing

in parentheses in the guide refer to the references listed in the bibliography.

I. *Regulations*

A. Health and sanitation: Federal (1, 2, 3). State (18, 19, 20). Individual specifications with description (16, 21, 22, 23).

B. Quality or grade: Federal (1, 3). State (18, 19). Municipal (20, 21, 23). Individual specifications with description (16, 22).

II. *Purchasing Policies*

A. Bidding (16, 19, 20, 21).

B. Payment (16, 17, 19, 20).

C. Delivery (16, 17, 20, 23).

III. *Details of Requirements*

A. Type (13, 14, 20, 21).

B. Class (4, 5, 6, 7, 8, 9, 10, 13).

C. Style of packaging (14g, 18, 19).

D. Quality or grade: U. S. official standards (2, 4, 5, 6, 7, 8, 9, 13). Meat packers' system (12). Packers' brands. Individual standards with description (20).

E. Cuts

Style: Federal (10). Commercial practice of the area (22, 23). Individual specifications with description, according to bone structure (14, 17, 18, 19, 20, 21, 22, 23).

Degree of trim: Commercial practice of the area (22, 23). Individual specifications with description: measure or ratio (14, 19, 20, 21, 23); boned (15).

F. Weights: Carcass—grade and class (10, 11, 14, 17, 18, 19, 20, 21, 23). Percentage of weight cut to carcass weight (2, 10, 18). Minimum and maximum (14, 17, 19, 20, 21, 23).

The publications and citations referred to above are as follows:

(1) U. S. meat stamps (folder). U. S. Dept. of Agric., 1942.

(2) U. S. graded and stamped meat. U. S. Dept. of Agric. Leaflet 122, revised July 1941.

(3) Buying beef by grade. U. S. Dept. of Agric. Miscel. Pub. 392.

(4) Official U. S. standards for grades of carcass beef. U. S. Dept. of Agric. Announcement 99, May 1942.

(5) Official U. S. standards for grades of lamb carcasses, yearling mutton and mutton. U. S. Dept. of Agric. Announcement 123, March 1931.

(6) Official U. S. standards for grades of veal and calf carcasses. U. S. Dept. of Agric. Announcement 114, re-issued April 1940.

(7) Market classes and grades of dressed lamb and mutton. U. S. Dept. of Agric. Bull. 1740, revised 1937.

(8) Market classes and grades of dressed veal and calf carcasses. U. S. Dept. of Agric. Circular 103, revised 1937.

(9) Market classes and grades of pork carcasses and fresh pork cuts. U. S. Dept. of Agric. Circular 288, October 1933. (Under revision.)

(10) Commercial cuts of meats. U. S. Dept. of Agric. Circular 300, revised April 1940.

(11) Meat cutting and price methods. U. S. Dept. of Agric., re-issued 1940.

(12) Standard beef grading system and packers' guide for grading beef. American Meat Institute, Chicago. (Free—supply limited.)

(13) Meat and Meat Cookery. National Cooperative Meat Investigations, Committee on Preparation Factors. National Live Stock and Meat Board, Chicago, 1942.

(14) Federal specifications, by Federal Specifications Board, Washington, D. C., for
(a) Beef, fresh, PP-B-221a, June 24, 1941.
(b) Lamb, PP-L-91, Oct. 3, 1933; Amendment 1, Aug. 29, 1939; Circular letter #60, Feb. 1942.
(c) Mutton, PP-M-791, Nov. 10, 1931.
(d) Veal, PP-V-191a, July 3, 1935; Amendment 1, Oct. 9, 1941.
(e) Pork, fresh, PP-P-571, Oct. 3, 1933; Amendment 2, Dec. 3, 1940.
bacon, PP-B-81a, Aug. 22, 1938.
fatbacks, PP-F-81, Sept. 20, 1932.
hams, PP-H-71, Dec. 8, 1931.
sausage, PP-S-91, March 1, 1942; Amendment 1, May 5, 1937.
(f) Liver, PP-L-351, Nov. 10, 1931.
(g) Packaging, Circular letter #21, Jan. 13, 1942.

(15) Tentative specification—beef: boneless, frozen. U. S. War Dept., Quartermaster Corps, Washington, May 11, 1942.

(16) Standard specifications for packing house products, Veterans Administration Facilities. Veterans Administration Facility, Washington, 1941. (Complies with federal specifications.)

(17) Specifications for meats. State of Illinois, Dept. of Finance, Springfield, 1941.

(18) Specifications for fresh beef, lamb, mutton and veal. Commonwealth of Pennsylvania, Harrisburg, March 1, 1935.

(19) Meat product specifications. State University of Iowa, Iowa City.

(20) Meats and meat products. Milwaukee County Institutions and Departments, Wauwatosa, Wisconsin, October 3, 1939.

(21) Specifications for meats and meat products. County of Essex, New Jersey.

(22) Specification No. 270 for packing house products. Los Angeles County Purchasing and Stores Dept., Los Angeles, January 1, 1940.

(23) Tentative standard, specification for meats and poultry. Board of Standardization, Dept. of Purchase, New York, N. Y. Amendment 1, June 7, 1940.

(Apropos of the above report, please refer to Miss Wood's comments as stated in filler at the end of this section. ED.)

Nutrition and the War

DEHYDRATED AND RECONSTITUTED FOODS DEMONSTRATION

One of the outstanding sessions, and one which provoked much interest and comment at the recent meeting of the American Dietetic Association in Detroit, was the exhibit and demonstration of concentrated and dehydrated foods. Samples of all the dehydrated products discussed were on display, several were reconstituted and cooked at the session, and those attending were given an opportunity to taste the finished product.

Kathryn M. Barry, Research and Educational Hospital, Chicago, who presided at the meeting, read a preliminary report of a committee of the Diet Therapy Section, Illinois Dietetic Association, on a "Study of Dehydrated Foods," the purpose of which is to "make available to all dietitians some knowledge of the present status of the various dehydrated foods." A preliminary survey of dehydrated products now on the market or included in the Army ration has been made and the study is to be continued during 1943.

A demonstration of the dehydrated products was then presented by Marye Dahnke, Director, Home Economics Department, Kraft Cheese Company, Chicago, whose informal talk on the appearance, quality and taste of the various foods and demonstration of their reconstitution were obviously the result of many hours of study and experiment, and whose enthusiasm for her subject was communicated to the audience.

In her remarks on dehydrated and concentrated foods in general, Miss Dahnke commented that a good many of the foods on display at the session would probably not be generally available, because there is no immediate prospect of a need for them, and the cost of production cannot be brought down to compete with the canned or fresh product. Some of the dried foods do not taste like fresh, but it is possible to get used to the flavors just as we have become accustomed to canned foods. In tasting dried foods, one should compare one dehydrated product with another rather than with a fresh product. Full directions for reconstituting and cooking are included in all packages of these foods on the market. Miss Dahnke emphasized that the packaging of dehydrated and concentrated foods is a weighty problem, since air and moisture play havoc with these products.

Some of the observations and specific facts about the individual products which were included in Miss Dahnke's talk, and a few of the supplementary remarks by members of the audience attending the demonstration, follow:

Great improvements have been made in the production of dehydrated whole eggs. Dried eggs will keep without refrigeration for extended periods. Reconstituted whites of eggs can be whipped until stiff, and do not break down. If allowed to stand after being whipped, they will return to liquid form in the refrigerator, and can then be whipped again the next day. In scrambling reconstituted dehydrated eggs, do not stir too much as they tend to break up more easily than fresh eggs.

In the past, spray-dried whole milk has been sold in vacuum-closed tin cans to ensure good keeping qualities. Spray-dried whole milk reconstitutes easily and is quite palatable. In preparing this milk for quantity servings, a wire egg whip is of material aid. It has been found that the milk improves in flavor if kept for several days in the refrigerator.

Until recently plans were under way for the promotion of spray-dried whole milk packaged in a waxed cardboard container. This idea is shelved for the present, since so many more million pounds are being used for our armed forces and the Lend-Lease program than had been anticipated. There is one brand of spray-dried whole milk being produced today by a special process which serves to retain a considerable amount of the vitamin C originally present.

The production of dehydrated grated cheese presented real problems in the early stages, but these now seem to have been overcome. This product contains from 12 to 15 per cent moisture. In the last few years an even more concentrated dehydrated cheese product has been produced in the form of cheese powder which is being packaged today in several different ways.

Sixteen ounces of dehydrated meat makes almost four cups (dry), and resembles ground left-over pot roast. So far it has been packed only for Lend-Lease, and beef is the only meat dehydrated at present for such purposes. It is packed in vacuum cans. An equal amount of water is added in reconstituting the product, which makes a good meat loaf or with egg added, meat patties.

Soups will probably be one of the most stable of the dehydrated products, since many canned soups have been discontinued. (Tomato, vegetable, chicken and mushroom, in the order mentioned, are the four most popular soups.) The several brands of dehydrated or concentrated chicken soup now available, in which chicken fat is the base, have sold very readily. Monosodium glutamate (hydrolyzed wheat protein), an ingredient of these soups, was formerly distributed by a Japanese importing firm. This vegetable protein derivative is now manufactured in this country and is rationed. One company is making a similar protein derivative from sugar beets instead of wheat.

Partially dehydrated chicken and turkey broths, of oily consistency, are now on the market. One teaspoon is combined with a cup of hot water in making the broth.

Pea soup and navy bean soup are made by many companies and vary greatly in flavor, depending upon how the pea and bean flours used in their making are processed. There are special techniques which must be employed in the preparation of these flours if unfavorable results are to be avoided. Very often the flours develop a burned taste which no amount of seasoning will overcome.

Several other recent developments in concentrated soups made from potato flour and soy bean flour are now under investigation by commercial concerns.

Dehydrated split pea soup and yellow pea soup, which require but five minutes' boiling, are also on the market. Any of the dehydrated soups now available, as a matter of fact, need but a few minutes cooking before serving. Granulated bouillon is used in making these soups. Bouillon cubes, incidentally, are another dehydrated product in use for some time.

One firm is drying mushrooms to replace the canned product, no longer available. These are allowed to stand about 15 minutes in warm water and are then simmered about 10 minutes in the same water, since much of the flavor leaches out in the water in which the dried product is soaked. Plans should be made to use this liquid. Cream of mushroom soup is made of spray-dried skim milk and mushroom flakes, and seasonings. It is necessary to make a paste of the dry ingredients and a little water before adding the remainder of the liquid, in order to ensure a smooth texture.

Miss Dahnke displayed a large and inclusive exhibit of soy bean products, and stressed the fact that the soy bean requires careful processing and preparation for palatable results.

Soy beans are dehydrated by nature, that is, without artificial drying. They originally contain 20 per cent oil, but those now on the market have had much of the oil removed for use as such; in other words, soy beans as marketed at present are really a by-product of the oil production process and contain only 5 to 6 per cent oil instead of the original 20 per cent. It is possible that the beans will be used in making sausage and other meat products, although this is not permitted as yet.

The only place where soy bean grits can be bought at present is in "health food" stores. A flavor carrier is needed to make them edible; for instance, by means of adding grits, a pound of ground meat can be extended one-third, and a pleasing nutty flavor results. Flour and grits have been used in soups made for Lend-Lease. Soy bean macaroni and soy bean noodles are products recently developed which do not cook to a very soft consistency and therefore may be objectionable at first.

A porridge containing rolled oats and soy bean flakes is being prepared for Lend-Lease. Soy bean milk, homogenized and "vitaminized," and canned fresh soy beans have been on the market, although they probably will not continue to be available because of the shortage of tin.

Baked beans, precooked and seasoned before dehydrating, will cook in 30 minutes, and make a very satisfactory dish.

Banana flakes from Brazil are on the market in package form. This is the only dehydrated product manufactured outside the United States which is now in use in this country.

Dried tomato is available in the form of powder (made from purée), flakes, and pieces. These products, which are used primarily as an ingredient in soups, are very expensive, because of the large amount of water in tomatoes which must be removed.

Gravy made with a beef extract base and a thickening agent is another newly-devised food concentrate which needs only added water. In view of the possible meat shortage, this may be a popular and important product.

Onion and parsley flakes are still in favor. It should be noted that onion flakes must be kept covered to avoid caramelization of the product.

Spaghetti with tomato sauce has been a very popular product, also the macaroni-and-cheese dinner combination. The tomato sauce, formerly canned, is now packaged in a tightly-sealed envelope. The sauce contains other dehydrated vegetables for flavoring and the whole dish can be prepared in 7 minutes.

Dehydrated apples in the form of "apple nougats" are very successful. Combined with water, sugar and cinnamon, they make a delicious apple sauce. Sometimes the nougats are compressed into brick form.

Dehydrated carrots reconstitute very easily and are considered a satisfactory product. Occasionally, when improperly packaged, they develop a definite alfalfa taste and odor.

Other vegetables on display which had been successfully dehydrated were potatoes, rutabagas and cabbage.

In answer to a question concerning the effect of hardness of water on dried products, Miss Dahnke said that a difference in water does sometimes make a difference in the reconstituted products, although she had had good results with the products she had reconstituted with the very hard water in the Chicago area.

Mary I. Barber, Director of Home Economics, The Kellogg Company, and Food Consultant to the Secretary of War, supplemented Miss Dahnke's discussion of dehydrated foods, stressing their importance in the war program. From the point of view of the Army and Lend-Lease needs, the required cubic feet of shipping space as well as the weight of a product must be considered, and products to be dehydrated should be of high quality.

Miss Barber mentioned that a dehydrated foods

cook book for the Navy had been prepared by Dr. Carlin of Swift and Company. Recipes in this book specify the length of soaking time, as well as the exact length of the cooking period. Incidentally, it is hoped that this book will also serve to teach Navy cooks not to overcook other vegetables. The cooks will be instructed to use as little water as possible in cooking dehydrated foods and not to throw away any water in which the food is cooked. (It is understood that this cook book will not be generally available to persons other than Navy personnel.) There is no mention of the nutritive value of foods in the just-mentioned cook book. Recipes are given not only in amounts for 100, but also for 8 and 2 persons, as they are to be used by task forces who may become isolated in small groups. Miss Barber remarked that ready-to-eat cereals are really a dehydrated product. A "bowl pack" of dry cereal, prepared for use by the armed forces, is a waxed cardboard package which serves as a dish for the cereal, to which milk may be added.

In the discussion of terms, it was brought out that "refresh," "reconstitute" and "rehydrate" are all in good usage and have the same connotation. Throughout the discussions it was evident that the food industries, through their research laboratories, are making every effort to fill the gaps in food shortages by providing acceptable products, and are cooperating in every way with the government in meeting the present war needs.

CANTEEN ORGANIZATION AND EQUIPMENT

At the Detroit meeting of the American Dietetic Association, interest in the workshop on canteen organization and equipment proved to be great, and the ideas and suggestions presented there truly justified the interest shown by those who attended.

Frances MacKinnon, who presided at the meeting, explained in her introductory remarks that the division of responsibility in the event of a disaster, considered from the standpoint of the over-all city organization for defense, or civilian protection program, follows a general pattern: the American Red Cross is responsible in disasters resulting from natural causes and for supplying food, shelter and clothing during an emergency period in disasters resulting from war, etc.; following the emergency period the responsibility falls on the local community organization. Such a division is necessary since the citizen cannot ask the protection of his government against disasters resulting from natural causes, *i.e.* storm, flood, etc., even though he can ask for protection from the dangers of war.

As a result of the above pattern of responsibilities, for one period of time the feeding unit is under the Red Cross and for another period it is under the local disaster committee. This varies in different cities.

Organization. Katharine Harris, Department of Institution Management, Cornell University, who has been very active in working out canteen courses and in studying canteen equipment, and who is consultant for the revision of the American Red Cross canteen course, explained that New York State has a committee which has set up a plan to be used throughout the state, the local committees making their own adjustments as necessary. According to this plan, a large number of volunteers will be trained on a state-wide basis, but the plan for getting teachers differs in each locality. One definite part of the plan is that every community should have the best available person in that community to act as technical adviser. Ideally, this person would work between the Red Cross organization and the OCD so that there would be no overlapping or cause for dissatisfaction because of duplication of effort. All available places where meals may be served in the communities are listed, and master menus are made up in accordance with available local supplies.

In the small community, lay leaders and those in the Extension Service of the state who have had years of experience in foods and nutrition and in serving meals are often used as teachers of the lay groups in the canteen aide course (not the 20-hour canteen course). In describing this program, Miss Harris stated: "We have a plan whereby we would try to cover the needs of the rural areas to make themselves ready and to cull from the community groups the leaders best able to qualify because of their knowledge of sanitation and cooking processes. We try to help them think through a plan suitable for their own communities—menus, recipes and procedures which would be suitable in time of emergency."

New York State has a director of training courses who approves all canteen courses. According to Miss Harris, with the revisions in the Red Cross course it is hoped that the 10-hour food service course for canteen aides will be more suitable for its purpose. The present point of view, she stated, is that "we need more workers than plans"; therefore emphasis will be on actual practice and on sanitation. Miss Harris explained that this is the only course that lay leaders will be allowed to give and stressed that no prepared material can take the place of teachers with ingenuity in setting up plans for action in an emergency. There will be a 3-day training school for these leaders, through whom the state organization works.

Winning S. Pendergast, supervisor of school lunchrooms, Detroit, who has been responsible for organizing the canteen work for a widely diverse and especially vulnerable industrial area, described the over-all organization of volunteers for the

stationary units in that area. She explained that in order to prevent volunteers who have completed their canteen course from signing up for other work, they are asked to sign up for work in a stationary canteen. They are then assigned according to a map prepared by OCD. In Wayne County there are 20 areas, of which Detroit has 12. The downtown district is to be taken care of by hotels and restaurants, while each of the other areas has a headquarters school, the principal of which is the disaster chairman, called "shelter chairman," for the district. Schools were chosen according to their location, construction of building, because they had a man instead of a woman as principal, etc. Each headquarters school controls the area, and other schools in the area are called "center schools." Stationary canteens have been set up in the schools with the permission of the Board of Education. These schools are also Red Cross centers for clothing, etc. as well as food.

In the control center, in the event of an air raid, the incidents in the disaster are recorded as they accumulate, and the shelter committee determines what shelter or shelters should be opened. From Red Cross headquarters this information goes by telephone to area headquarters chairmen. These in turn notify the center school chairmen who get in touch with the staff of that school—engineer, janitor, medical services, etc. A member of the food committee is then notified at Red Cross headquarters, who in turn notifies area disaster chairmen. Each lunchroom manager is in charge of emergency feeding at her own school, if she lives near enough. Otherwise the area food chairman assumes the responsibility.

Canteen workers and leaders are allowed to use the telephone for "essential calls." They are expected to be ready to leave home as soon as the all-clear sounds. Schools that are completely equipped to serve in a disaster are indicated on a map at headquarters, also those needing a manager, those where volunteers are needed, etc.

Several forms have been prepared for the purpose of having easily accessible information in writing. Form #1, used by area chairmen, provides space for the name of the manager, telephone number, home address, and time needed to reach the school, also the same information about the alternate. Form #2, used by center school chairmen, has names of food staff members listed in order of proximity of their homes to school, telephone numbers, home addresses, time needed to reach school, and means of transportation. Form #3, used by Miss Pendergast and each area food chairman, is for the purpose of recording the time at which a message is received, time transmitted, name of person notified, whether school was ordered opened, reported damaged, or ordered closed, and time check call was received. Form #4, used by area chairmen to show that calls have been made, records calls to center school staff members, time staff member received message, and time needed to reach school.

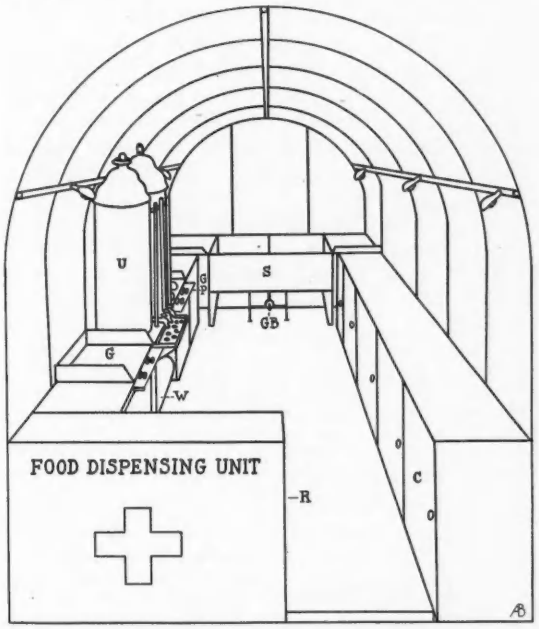
All volunteers are coached in the wording of the message to be transmitted, which is as follows: "This is a Red Cross shelter program test message .....School is ordered opened, time of message, name of person dispatching message." The center school chairman having been notified that her school is to be opened, and having selected the three or four people she considers most dependable or essential, notifies them, and calls the leader of the group of 15 or 16 volunteers. A chart shows the "canteen communications chain" which is arranged so that each person calls only two other persons. Names of leaders and volunteers are inserted on this chart. In the smaller schools the chains have only 7 instead of 15 or 16 volunteers.

Miss Pendergast reported that it had been found advisable to assign volunteers to definite responsibilities in the lunchroom—more well-defined than would be necessary in an actual disaster—so that each person will feel that she has a substantial reason for responding to a practice call.

Ruth Gordon, University of Kansas Hospitals, explained that each canteen corps in Kansas City has 15 women as members. The captain of each corps is a dietitian or other professionally trained person. Each captain has a first and second lieutenant. One person is chosen from each corps for the mobile unit, a total of nine in Kansas City. The mobile canteen unit has a captain, at present a dietitian at the University of Kansas Hospitals; and the mobile canteen is housed at the hospital to facilitate a more efficient checking and handling of supplies. In tests, it has been found possible to report at the scene in one hour, after buying the food. For an emergency call, the food preparation is done after arrival on the scene. Usually food is not kept on hand, but ordered after the call comes.

Equipment. War Emergency Bulletin #522, New York State University, pictures and describes a mobile kitchen designed by Katharine Harris and others for use in small communities. In this type of mobile equipment, the plan is to use local talent and the equipment which normally would be available. It was planned so that any local carpenter could construct it at an estimated cost of $450 for a second-hand truck, $262 for construction materials, and $285 for equipment purchased, or considerably under the cost of the commercially-manufactured units now purchasable. (It is assumed that labor will be donated). This mobile kitchen is largely used to transport prepared food by means of insulated boxes for keeping food hot. There are two heat units, each with two compartments lined with galvanized iron and holding 10-gallon cans, which can also be used as ice chests.

How to make the units interchangeable so as to make for flexibility, if more working space is needed, for example, is explained in the bulletin. There are two low baker's stoves, with "Protane" gas as a fuel, which has been found to be quicker than oil. No provision is made for dishwashing nor for carrying large quantities of water, but there is a hand sink and it is possible to wash dishes by putting one tub on the stove to keep the water hot. This mobile unit has been tried out at a county fair, where 300 to 400 were served at one meal, and a total of 2500 per week. When using only one side of the truck, 6 persons a minute were served. Food was prepared in a nearby kitchen and simple meals only were planned.



R = refrigerator
W = water tank
G = grill
U = coffee urns
GP = gas plate
S = convertible sink steam-table
GB = gas burner
C = cupboards

Meals for Many, another publication of New York State University, Albany, is a limited publication for state residents, but will be supplied to others at 30 cents per copy.

In answer to a question as to whether serving from the truck is an advantage, Miss Harris replied that in her experience it was advantageous because the temperature of the food is maintained more readily when the cans are kept in the fireless-cooker compartments.

Miss Gordon described a mobile canteen owned by the Kansas City Chapter of the Red Cross. The unit is a mobile canteen trailer and truck, the total cost of which was $500, the truck, labor, gas equipment, etc., having been contributed. This type of trailer, on two wheels, must be in perfect balance. The plan of the trailer has some unique features: among them, a 2-tub sink of galvanized iron with box placed on top holding two 10-gallon cans (made by manual training students), which can be used as a steam-table as a gas burner is installed beneath; an arched canvas ceiling which provides ample head room; a refrigerator and electric lights on a battery; a water tank which is hung horizontally under the two 8-gallon coffee urns; a gas plate and 2-burner grill; cupboard space along one whole side of the trailer, with working space on top which is also used as serving table; and a section of canvas which can be fastened to the top and stretched for 25 feet out over this serving shelf. This unit has been used on numerous occasions and has proved very successful. The Red Cross motor corps works with the canteen corps, transporting the food which has been prepared elsewhere or can be prepared on the trailer. The truck, which is entirely separate and which is under the care of the motor corps, holds large quantities of food for transportation.

Those who attended the workshop on "Methods of Teaching Canteen Procedures to Lay Groups," which is reported in this section, were given an opportunity to examine pictures of standard Red Cross mobile canteens, including a picture of the Chicago Red Cross canteen in action, as well as photographs of other mobile and stationary canteen units. These included a set of small, movable cabinet units, to be set up on the ground, used by the Red Cross canteen corps of Peoria, Illinois. These units, when placed for use, are arranged in a U-shape in the following order: Cooking units: Unit I consisting of a 3-burner gas plate, rectangular iron griddle, Dutch oven and lid, and rubber connections and attachments for gas drums; Unit II consisting of an aluminum roaster, double boiler with stock pots, cook book, and colander. Service units: Unit III consisting of food preparation cutlery, table service cutlery, measuring cups and spoons, ladles, cleaning equipment—towels, soap, cleaners, scrapers, brushes; and Unit IV consisting of individual service plates, bowls, cups and pitchers, and first aid kit. Dishwashing Unit V includes galvanized iron tubs, pail, soap compound, galvanized garbage can with lid, retinned square 10-quart pails, fire extinguisher, and paper towel holder. Unit VI includes a 3-gallon coffee urn, 10-gallon milk can, and bread board. Photographs of the trailer canteen planned by the engineers of the Atlanta Gas Light Company, and described in the September issue of *Practical Home Economics*, were also examined. This is a small, compact unit with supplies and small equipment on trays which pull out, and 10-gallon cans inserted in a compart-

ment at the back. The coffee urn fits into a compartment near the front. The unit has facilities only for serving, not for preparing meals, and carries charcoal buckets for heat.

METHODS OF TEACHING CANTEEN PROCEDURES TO LAY GROUPS

The following is a summary of the material presented at the workshop on "Methods of Teaching Canteen Procedures to Lay Groups" at the Detroit meeting, October 21, at which Adeline Wood presided.

The 20-hour canteen course as presented in Chicago by the American Red Cross, through the Nutrition Department and the Canteen Division of the Volunteer Services, includes one 3-hour lesson, three 5-hour lessons, and an outside assignment of 2 or more hours or alternatives of three 7-hour periods, or eight 2½-hour periods. Mrs. Verna A. McKinley, who described the course, said that the city and suburban districts are divided into 15 divisions, in each of which is a "canteen captain" who selects from those applying the persons who are to attend the class, the number (not more than 21) of whom depends upon the population of the geographical division, arranges for the place and time of the class, collects the registration fee of $1 which pays for the booklet "Suggestions on Feeding in a Disaster," "Recipes for 100" and other material. Teachers are interviewed and accepted by a nutritionist. The first 2 hours of each class are given over to discussions of disaster procedures, high standards of mass feeding, menu planning, preparation of food for large groups, purchasing, sanitation, and cleanliness. Visual material may include work assignment outlines, blueprint of canteen arrangements, and photographs, charts, canned goods labels, market price clippings from newspapers, and sample oranges, lemons, grapefruit, etc. Demonstrations are given on sharpening a knife, paring fruits and vegetables, and use of measuring cups and spoons. The practical food preparation which follows each discussion period includes serving typical disaster menus to a large group—settlement house children, children of class members, etc. The outside assignment consists of planning disaster menus for 3 days for 100 persons with accompanying market order and cost list. The classes are usually held in churches or community houses where kitchen, sitting space and blackboard are available, and which would make satisfactory stationary canteens in the event of a disaster.

The mobile canteen is driven to the class location for the last lesson. Food is prepared and conveyed by the mobile unit to an outdoor serving site. After finishing the course, class members may then become canteen members by doing 144 hours of field practice, 50 hours of which is probationary, in the canteen at headquarters or in outlying areas, or in the food departments of hospitals. Each member is appointed to a committee, such as menu, preparation or other, for the duration. In the event of actual disaster, canteen corps members are advised to assume only the duties as outlined by the general canteen chairman and division captains, who will decide whether cooked food obtained from city catering service shall be served from the canteen or whether uncooked products shall be delivered to the disaster site and prepared by the corps members. The Red Cross will also immediately send a staff member with fiscal authority, who will authorize the registration of those to be fed and see that meal tickets are issued.

Mrs. McKinley stated that the majority of those who sign up for canteen work usually have time to devote to charity, and even though they may not have had much experience in food preparation they have proved to be "intelligent, cooperative and willing to learn." Information from those who have observed or taken part in canteen service here and abroad has been presented for the benefit of class members.

A plan for the 10-hour canteen aide course as presented in the districts adjacent to Rochester, New York, was outlined by Dorothy Andrews. The course is divided into five 2-hour lessons as follows:

Lesson I—General organization of a unit, responsibilities of leaders, etc.; sanitation of operation (food handling); safety regulations; and effective dishwashing procedures.

Lesson II—Equipment of stationary and mobile canteens—the equipment of each town unit checked and availability of additional equipment noted.

Lessons III and IV—Checking of emergency menus to be used in Rochester and Monroe County for the first 3 days; also a menu with recipes and food order for 100 for a week; methods of keeping foods hot or cold and different methods of serving during an emergency.

Lesson V—A food demonstration on sandwich-making, cream soups, cocoa and coffee, and a general review.

At the conclusion of the course printed sheets with regulations for effective dishwashing, emergency home pasteurization of milk, and disinfection of drinking water in the home in case of an emergency are distributed to the leader of each unit to be posted in the serving center, together with the duties of the leader or kitchen chairman.

Meetings are held in a different serving center each week, thus giving each group an opportunity to check carefully on the efficiency of their own unit. The kitchen and dining room chairmen work out a definite schedule of responsibilities for all workers and assignments are made accordingly.

This type of course was planned by the American Red Cross with the help of the Board of Education for the benefit of those women who would not be able to take the nutrition and canteen courses and

who through their experience in preparing and serving community dinners are well qualified to serve during an emergency. Through the cooperation of the Monroe County Nutrition Committee, the location and capacity of feeding centers in every village were determined, also the names of the persons who had volunteered to be kitchen and dining room chairmen. The local Red Cross chairman then contacted volunteers for the canteen aide class. Before starting the course, the teachers met and discussed the Rochester and the Monroe County canteen aide program and the instructor's outline based on Red Cross and other instructional material prepared by the Office of Civilian Protection. In one part of the county, members from a town and three neighboring villages met in the high school cafeteria. This group is planning to prepare the food in one center and send it out to the other centers for serving. After completing the course they volunteered their services to the school lunchroom manager. In some sections of the county the villages are several miles apart and thus far it has been impossible to organize canteen aide courses, so one of the volunteers is taking the course in Rochester and plans to organize a canteen aide unit in her feeding center. Miss Andrews said that it has been interesting to note how the enthusiasm of the first group has motivated the formation of other classes in the county.

Margaret Gillam described how volunteers had been trained during working hours as canteen aides in the New York Hospital. Eighty women have been trained in about three months, each of whom has devoted 40 hours to such training. The work was carefully laid out by the American Red Cross and the Nutrition Department of the hospital. Six volunteers a day were present, usually one day a week, sometimes two days a week. They were assigned to the salad division, bake shop, vegetable unit, formula room (where they marked bottles and observed), serving pantries (where they assisted in serving trays), the private patient department, etc. When half through their training, they attended a lecture on food, nutrition, and menus. Miss Gillam stated that the hospital employees liked having the volunteers around and welcomed them because of the assistance they were able to give, so there was no problem on that score.

Ruth Gordon, University of Kansas Hospitals, told how canteen aides were trained by dietitians who meanwhile were carrying on their regular work. On the first day the aides were shown the department and told what they were expected to do. For one assignment they were given a hypothetical disaster situation and asked to make out a menu, market order and price list for three days. They also chose the number of people for the theoretical menu. Food preparation practice was given in the hospital kitchen, producing dishes suitable for use in a disaster. A retired dietitian helped to train the aides. Miss Gordon stated that the hospital employees apparently liked the canteen aides, and the canteen aides, in turn, gave the employees' jobs a certain dignity conducive to morale. At present there is a group of Negro women who are spending three hours a week, at night, training in food preparation. When the hospital has had banquets, the volunteers have been more than pleased to come in and help, so that the dietitians feel that they have been well repaid for the work involved in training them.

Ada Lothe, Milwaukee County Institutions, said that the aim of the canteen aide course as presented at Children's Hospital, Milwaukee, is to create interest in and familiarity with the material found in the booklet released by the American Red Cross. Prerequisite to the course is the 20-hour nutrition course. Ten hours of class work are required for the canteen aide course. Representatives of other groups have been asked to assist. For instance, a member of the city Health Department discusses sanitation, a member of the nursing group, first aid. Some who have completed the course have been assigned to the blood donor unit or induction center, for practical training. The proprietor of a commercial establishment in Milwaukee, who has the contract to serve inducted men, has agreed to let canteen workers do the food service work and to give to the Red Cross the money he would otherwise pay to employees. In the canteen work classes, one assignment was the keeping of notebooks to be graded at the end of the course. These notebooks have proved to be very interesting and have shown a great amount of effort on the part of students.

At West Virginia University, Madge Goldsmith explained, women had been trained to do canteen work and, moreover, had had good experience in applying this training. The men in the town built and equipped a mobile canteen and the canteen aides, for practice, served all the people in the community (about 200) plus 4000 who work at the rubber plant there. The women furnished the food which had been prepared at home. The milk was given by the dairy. As a result of this project, some of the women who assisted in feeding and who had not had the canteen course asked to be enrolled.

During the question and answer period, Melva Bakkie, American Red Cross, explained that the new canteen manual of the Red Cross will have nothing in it on organization, only practical food preparation and service. ARC 740 describes the course and the qualifications for the canteen instructor. The procedure is for the nutrition committee of the chapter to recruit teachers and have them fill out applications which are in turn sent to the State Nutrition Committee for approval. Nutrition students who have not had the 20-hour nutrition

course are allowed to take the canteen course. At Columbia University the home economics students in their senior year have a unit in nutrition and a unit in canteen and field work (under supervision) and practice teaching for which they receive 2 to 3 units of credit. They are then certified to teach the canteen course in their own communities. College seniors in other universities who have had training in nutrition and work equivalent to that given in the canteen course, can be certified as canteen instructors if their preparation is approved by the Nutrition Department of the Red Cross.

MATERIALS FOR CANTEEN COURSES

At the workshop on teaching procedures for canteen courses, described above, Adeline Wood stressed the need of carrying over nutritional standards to planning for emergency feeding. She said that the National Live Stock and Meat Board has a teaching device entitled "Nutrition Yardstick" which will be useful in canteen courses. Also, the British Library of Information, Rockefeller Plaza, New York, has a movie entitled "Mrs. T and Her Cabbage Patch," 20 minutes, 16 mm. sound, available on loan.

Miss Wood suggested that, in view of the expense involved in getting out printed or mimeographed materials, sample copies should be sent for first, and quantity orders placed later if the material proves adaptable to needs, also that only material actually wanted in a series of printed pamphlets be ordered, rather than the whole series. This applies to both commercial materials and those prepared by the Association for distribution to members. As stated in this JOURNAL for June (page 412), the Chicago office of the American Dietetic Association is making available to members the material prepared by the Chicago chapter of the American Red Cross, including:

(1) List or bibliography of suggested literature for canteen instructors' kit. 5 cents.
(2) Three lessons with supplementary material on Section IV—Food Supply, *Suggestions for Feeding in a Disaster, ARC 994*. 10 cents.
(3) Excerpts on "The Sanitization of Dishes," based on the article by W. L. Mallman, in this JOURNAL, October 1940. 5 cents.
(4) Data on the types of canned goods which may still be packed in unlimited and limited quantities, from Tinplate Conservation Order (as of April 1942). 5 cents.
(5) Recipes from *Suggestions for Feeding in a Disaster, ARC 994*, modified to yield 100 uniform portions with suggestions for equivalents in number, measures or weights, for use in emergency. 15 cents.
(6) Regulations for control of dishwashing in public eating and drinking establishments, Board of Health, City of Chicago. 5 cents.
(7) "Do You Know Your Egg Laws," *Consumers' Guide*. 5 cents.
(8) "Housekeeping Procedures," contributed by Mrs. Marian Matheson, Peoria, Illinois. 5 cents.
(9) "Resources for Feeding Large Groups of People (Other Than Providing the Foodstuffs)," contributed by Dr. Elizabeth M. Gardner, chairman, State Nutrition Committee, Albany, New York. 5 cents.

The price of the complete set listed above is 45 cents.

Other material now available at the Chicago office includes the following, reproduced from that prepared by the Office of Civilian Protection of Monroe County, New York:

(1) "Immediate Emergency Menu—First Day or Two," with market orders for 100, 200, 300, 400, and 500 servings and list of items to be kept on the emergency shelf. 5 cents.
(2) "General Suggestions for Committees for Food Preparation, Dining Room Service and Dishwashing." 5 cents.
(3) "Emergency Pasteurization of Milk." 5 cents.
(4) "Disinfection of Drinking Water in Case of Emergency." 5 cents.

Also, the following material reproduced from the Instructor's Outline of the Rochester, New York, chapter of the American Red Cross, for the 10-hour canteen aide course:

(1) "Arrangement and Equipment for Prolonged Emergency Service," including 2 diagrams. 5 cents.
(2) "Suggested Methods for Icing Foods, Icing Fish and Keeping Foods Hot." 5 cents.

The price of the last two sets complete is 25 cents.

THE CANTEEN CORPS IN ACTION

BERTHA IDE[1]

Canteen work was started in Norfolk, Virginia before the outbreak of World War II. To understand the need of such service in this vicinity, one need only refer to a map of the city and nearby points—as can readily be seen, the city is almost an island.

Our canteen classes were started following a hurricane in 1936. The waters from Chesapeake Bay and Little Bay swept across this narrow piece of land, washing away houses with the rushing current. People in the section affected were without shelter and food, as the storm came during the night and few realized their danger until dawn. After this costly and perilous experience, a canteen corps was organized under the sponsorship of the Norfolk Dietetic Association. The city was divided into sections, with a dietitian as captain in each, and the canteen workers served sandwiches and coffee at fires and during disasters such as the second hurricane which befell the city during the year following our organization. Classes which were

[1] Norfolk General Hospital, Virginia. Miss Ide prepared this paper for presentation before the American Dietetic Association in Detroit, October 1942, but was unable to attend the meeting.

approved by the American Red Cross were taught by the local dietitians and the supervisor of the Home Service Department of the Virginia Electric and Power Company. When the course was completed, the members served a meal characteristic of that suitable for use in time of disaster.

The morning after war was declared by the United States, the Red Cross called on our association for help in giving a condensed course in canteen work. An appeal was made through the daily paper for workers and 600 women responded. Not knowing how soon disaster would strike, the course was given by means of four daily 2½-hour classes. Three hundred graduates of the canteen course also completed the nutrition course and received their uniforms and badges.

Many cities have done more educational work, but few cities, I believe, have had real experience in canteen work such as we have had in Norfolk. Let us again look at the map—on one side of the James River we have Fort Eustis, Langley Field, Fort Monroe, Fort Stewart and the Newport News Ship Building and Dry Docks. Across from Norfolk, on the Portsmouth side, are the Navy Yard and Naval Hospital. In Norfolk and along Chesapeake Bay are the Naval Base and Air Station and following the shore line, the Coast Guard Training Station, Fort Storey, Camp Pendleton and Camp Athelia. You can understand why I wrote, in a previous article, that Norfolk was in the "fighting part of the country," for these vital points are all within 30 miles of Norfolk.

There are 21 canteen stations located in schools and churches, as well as in the casualty centers throughout the city, to each of which a dietitian is assigned.

If an air-raid alarm sounds between 8 a. m. and 2 p. m. it is not necessary to call anyone by telephone, for the women assigned to each station report at once on hearing the alarm. Four of these casualty centers are open every day for use by civilians who are knitting, sewing, rolling bandages, etc. for the Red Cross. The canteen workers prepare dinner, consisting of soup, roast, one vegetable, dessert and coffee, for these women.

A phrase heard over the radio—"and the survivors were landed at an East Coast port"—has grown horribly familiar to everyone. The whole shocking impact of these sinkings is brought home to us here, since large numbers of refugees and survivors are landed in Norfolk. At such times, the immigration officers and Naval Intelligence Service notify the canteen corps so that they can be prepared to care for these people. The suffering, shock, hunger, and heartache they have endured before being rescued and brought to shore are difficult to convey in words. We see them as they come in, after having been hanging on rafts or being jammed in small boats for days, without food or drink. Some are diabetic, some are nursing mothers, and all must be properly fed following hours of exposure. The dietitian is of great service at these times.

To cite one incident, a ship of refugees had left a foreign port for South America. When off the Virginia coast it was attacked by submarines and the ship was sunk. The passengers were landed in Norfolk. Among these people was a woman who could not speak English. With her were her four children, aged from one to six years. They were dirty, covered with oil, and frightened. The canteen workers bathed the children and provided clean clothes, but when they tried to feed them difficulties arose. They offered milk, broth, cereal, anything they thought they would eat, but the children refused everything. Finally they mixed chocolate syrup with the milk and this satisfied them. In the morning the refugees were put on a boat for New York bound for South America. The mother tried to express her thanks and appreciation in words, but failing in this, she kissed the Red Cross on the uniform of the canteen workers and had the workers kiss all the children good-bye. The canteen workers stayed with these people from the time they landed until they left Norfolk.

We are not allowed to feed the soldiers and sailors when they are off duty, as this is taken care of by the U. S. O. Last winter some of the workers took coffee at midnight to the men manning the anti-aircraft guns and sounding devices along the shore. This year the canteen corps has been asked again to provide coffee for these men. Those on duty look forward with great pleasure to these midnight visits and several have asked for special dishes such as they had at home—soup, chocolate cake, and lemon meringue pie. The workers were glad to bring these things to the men, but they have been asked to discontinue doing so, as those in command did not want the men "spoiled." About 400 were served each night from December to April. The coffee was served from large coffee pots and thermos jugs which were taken in private cars.

We are happy to say that the local union of the United Brotherhood of Carpenters and Joiners recently gave us a mobile canteen kitchen, which is equipped with electric stoves, coffee urns, sink, and all additional equipment necessary for serving 100 persons. The side of the unit opens, forming a platform from which the people are served.

The local Red Cross chapter house has a stationary canteen kitchen. Meals are served here each day to about 200 persons.

During the scrap-metal campaign the canteen corps set up serving stations in the junk yards of Norfolk and the Army and Navy loaned enlisted men to the city to collect the metal. From 35 to 50 trucks were used each day, with seven men on each truck. At noon they were served a light meal by the canteen corps. The equipment then was

very crude—an old oil stove or perhaps only a few bricks supporting a charcoal fire on which to prepare coffee, but the spirit to serve and help was very keenly felt by each woman on duty.

Another service of the canteen corps has been the furnishing and serving of milk and hot tea to the blood donors in the hospitals.

There is also a Negro canteen corps in Norfolk. On the very first day they began their instruction, 40 Negro refugees were brought to Norfolk and were cared for and fed by the members of the class.

As I mentioned before, Norfolk has done less educational work in nutrition than some other cities. We have, however, opened a Nutrition Center at the Red Cross headquarters where someone is on duty at all times during the day to answer questions on nutrition for the public. Canning demonstrations have been given at the Nutrition Center and other exhibits will follow. Free bulletins are there for distribution and also books for reference. Recordings are being made at one of the broadcasting stations on different aspects of nutrition and these will be loaned for use at meetings of groups such as parent-teachers associations. The Norfolk Dietetic Association had a series of articles in the daily papers on "Lunch Box Menus;" "Sugar Substitutes"; "Foods for Victory"; "The Balanced Diet"; and other subjects designed to interest the housewife.

These are only a few of the experiences and activities of the dietitians in the canteen corps in Norfolk. As to the future, come what will, we are ready!

OPM Meat Rulings

Adeline Wood, member of the War Activities Committee, A. D. A., brings to the attention of readers of this JOURNAL an advance release by OPM for publication December 11, in which it is announced that as of that date specific dollars and cents price ceilings were set on all beef carcasses and wholesale cuts at the slaughterer and wholesaler level. No change was made in price ceilings for veal carcasses and cuts and processed products including sausage.

Under the revised regulation all beef sold at wholesale must be graded by official federal graders. In computing base prices, allowance already has been made for federal grading costs. A deduction will be required on beef sales, where the meat is not thus graded. The revised regulation continues substantially the grades of beef which have been in effect for the past several months. Steers and heifers are graded AA or choice; A or good; B or commercial; and C or utility and cutter-canner—a class which need not be identified by grade mark. Cows are graded similarly, except that they may not grade "choice." Grade identification also is required on stags (emasculated bulls) of Grades A, B, and C. Sex identification still is required on stags and bulls, but not on cows.

Since beef is sold at wholesale—not only in the form of carcasses, sides and quarters, but also in wholesale or primal cuts—ceilings cannot be set unless the product to which they apply is defined thoroughly. This is done in the new order. Furthermore, since beef often is shipped over large areas and the ceilings are nationwide, the need for uniformity is apparent.

Accordingly, provisions are made for nine primary wholesale cuts and five additional cuts made by combinations of various primary cuts. The hindquarter is broken from the forequarter by cutting the beef side between the animal's 12th and 13th ribs.

Names of the cuts and the percentage each constitutes of the carcass of beef are shown as follows: carcass 100 per cent, forequarter 51.25, regular chuck 24.75, rib 9.25, brisket 5.50, short plate 7.50, foreshank 4.00, hindquarter 48.75, round 23.75, sirloin 9.35, short loin 7.65, flank 4.50. (Kidney, suet, hanging tenderloin, bone waste and shrink account for the remainder.)

In addition to the above cuts, certain combinations are permitted. A back may be made by leaving the regular chuck and rib combined; the cross cut chuck by leaving the regular chuck, the brisket and the foreshank in one piece; the triangle by leaving in one piece the regular chuck, foreshank, brisket and short plate; the arm chuck by combining the foreshank and regular chuck; and the trimmed full loin by combining the sirloin and short loin. No other cuts or combinations may be sold, except by suppliers direct to purveyors of meals.

Ten zones have been established for beef. These cover 48 states and the District of Columbia. The basing point is Kansas City. In general, zone boundaries have been set by reference to increases of 25 cents per hundredweight in freight rates, with allowance for tare and icing.

Hotel and restaurant supply houses will have the same prices as other independent wholesalers so far as most wholesale beef cuts are concerned. However, on the sale of fabricated cuts—specifically cutting up primal cuts into roasts, steaks, stews, etc. by boning or sawing through the bones of the wholesale cuts so as to prepare the meat for cooking without further fabrication—hotel supply houses may have a 20 per cent mark-up over the zone price where such fabricating is done. This 20 per cent also will apply to wholesale cuts from which at least 25 per cent of the bone has been removed.

In commenting on these new regulations and the meat situation in general, Miss Wood remarks that this is the time to be working on the development of meat specifications, since dietitians will be using cuts and qualities different from any they have used before and will be sure to come upon new ideas and practices which they will make permanent.

Book Reviews

What Do We Eat Now? A Guide to Wartime Housekeeping. By Helen Robertson, Sarah MacLeod and Frances Preston. Philadelphia: J. B. Lippincott Company, 1942. Fabrikoid. Pp. 370. Price $2.50.

Written by three authorities—Miss Robertson, home economics editor of the Cleveland *Plain Dealer*; Miss Preston, home economics consultant for the Institute of Family Service of the Cleveland Associated Charities; and Miss MacLeod, home budget consultant for the Society for Savings in the City of Cleveland—this book is ideal for its purpose, "A Guide to Wartime Housekeeping."

The content of the book includes competent discussions of such timely subjects as wartime management of family finance in which all the details of budgeting, saving, and conserving everything from rubbers to washing machines, clothing and food are concisely and correctly enumerated. An unusually simple method is used for portraying the planning of meals, the typographical arrangement of which is a definite asset.

The chapters which follow are in reality complete guides to the management of the culinary department. Nothing seems to have been overlooked, from marketing, storing (with a word or two about caring for that precious refrigerator), to saving fuel, and general care of all cooking equipment. Special attention is paid to such timely topics as new beverages (that is, beverages which will be new to many if the coffee and tea shortages become intensified) and soups, those mainstays of the kitchen in times like these.

It appears that the authors possess unusual foresight, for they have devoted almost one-fifth of the book's content to "The Meat Problem." As they say, we must use meats "to the last shred," and they then proceed to show us how, with cottage pie, meat and macaroni en casserole, chili con carne, and so on. In addition, the substantial legumes are lined up to bolster a wavering meat supply.

Vegetables, too, are not neglected. The fine points of the problem: whether "to cover or not to cover"; "when and how to buy"; and "what to eat" are thoroughly detailed. The recipes for these are such as to make one view with not too much alarm the coming of meals heavily vegetarian in content. Other timely chapters include "The Lunch Box" and "To Can, or Not to Can."

The Nutrition Handbook. A Complete Guide to the Nutritional Content of the Food We Eat. By Demetria Taylor. New York: Doubleday, Doran and Company, Inc., 1942. Fabrikoid. Pp. 231. Price $2.

We like this book. As one might expect, the author, an experienced writer in the field of home economics, writes fluently and always interestingly. The vitamins pass in review first, and the question as to how much of any one of these is needed and where to get this amount in common foods is answered. Summarizing, the author briefly reviews the "big four" of the vitamins—those "which must be checked in the menus every day," charting these as to most important functions and best food sources. She then lists a "round dozen" of foods which must be kept to the fore in planning the family's meals.

The big four of the "mighty minerals" and the "baker's dozen" food sources of these, are discussed in the chapter following, which serves to recapitulate and re-emphasize the important foods.

While comparatively little space is devoted to "Proteins —The Builders," the discussion of these is apt, and it is hoped that the somewhat disproportionate amount of space given to the vitamins will not lead the reader to believe that the latter are more important. The balance of the book is devoted to chapters on energy foods, meal planning, marketing, cooking, food fads, and a complete index.

New Commercial and Technical Dictionary. Spanish-English, English-Spanish. Edited by Antonio P. Guerrero. Brooklyn: Chemical Publishing Company, Inc., 1942. Morocco finish. Flexible. Pp. 600. Price $10.

This timely new dictionary, printed in unusually legible type, thumb-indexed, and strikingly bound, contains more than 50,000 words used in engineering, radio, textile, and other industries including those concerned with foods, as well as terms used in modern warfare, in business and in commerce. Of especial interest to dietitians is the inclusion of conversion tables of weights, measures, and monetary units. The greatest use for the book, however, will undoubtedly be in the commercial field. It is not self-pronouncing, and some familiarity with the Spanish language is evidently assumed. Whether a word is a noun, adjective, verb, etc. is indicated, also the technical field to which the word belongs is designated in parentheses and, when necessary, the gender of the word.

An interesting situation in regard to the Spanish-English vocabulary problem is revealed in the editor's preface. He explains that La Academia de la Lengua is the only authority that determines the standards of the Spanish language and that since it does not accept a new word unless it has been thoroughly studied and given a great deal of consideration, this process cannot keep up with the requirements of the present growth of the language. Because there are no corresponding Spanish words, English words have been adopted bodily for most technical terms and each of the 21 republics chooses its own pronunciation. The editor of the *New Commercial Technical Dictionary*, therefore, set for himself and his staff the task of attempting to establish a standard of terminology for technical and commercial words, by studying the dictionaries and glossaries of scientific terms now available, by collaboration with authorities in the Pan-American countries, and consultation with leading technical men in the United States. In thumbing through the pages at random we find such words as "dehydration" (*desecación*), "foodstuffs" (*productos alimentos*), "margarine" (*margarina*), "calory" (*caloría*), "freezing process" (*cavadura por congelación*), etc. But on searching, we fail to find the words "diet," "thiamin," "vitamin,"

and others now more or less commonly used in the food industries.

This is the first edition of this dictionary. We salute the editor for having undertaken such a huge task and look forward to future editions which will make it even more useful to dietitians and nutritionists both here and in the Spanish-speaking countries.

Breads and More Breads. By Lois Lintner Sumption and Marguerite Lintner Ashbrook. Peoria, Illinois: The Manual Arts Press, 1942. Cloth. Illustrated. Pp. 248. Price $2.

If the recipes in this book produce breads as tempting as their descriptions, it will be well worth the price. Though nothing is said concerning the qualifications of the authors, apparently the book was prepared by lay persons with practical experience in home baking and an enthusiasm for the use of home-baked products, which they have conveyed in their book for the benefit of other non-professional cooks. Nevertheless, it would be hard to imagine even the most experienced baker being able to go through the book without getting at least one or two new ideas for bread variations.

There is a historical introduction to the subject of breads, followed by some "imperative" introductory material, including lists of equipment, key to symbols, and substitutions; also, under "Bread Facts and Fancies," detailed information about yeasts (sponge, non-sponge method, ice-box method, kneading, rising, use of potato water and other ingredients and their effect on growth of yeast), making of "quick breads," keeping bread, freshening and use of stale bread.

The style is informal, but not inane. Breads of different nations are treated in separate chapters, each with a short introduction. Breads of America include familiar and unfamiliar variations of baking powder biscuits, quick breads in loaves and small forms, brown bread, etc. Those characteristic of the North and South are included, with names of contributors of certain recipes inserted (most of whom live in Ohio). We note a "war bread," used in World War I, also raised waffles, sour-cream coffee rolls, home-made crackers, salad wafers, popovers, orange breads, etc., all of which give an idea of the wide variation of the recipes included. There are Austrian *Kipfel* and *Krapfen*, Czechoslovakian *Kolacky*, Cornish "yeasty splits," English and Swedish saffron bread, French *baba* and *brioche*, German and Hebrew *küchen*, Dutch *Krentenbrood*, Indian rice-flour *chuppaties*, Russian, Mexican, Scottish, Swiss breads, etc. etc. In all, we estimate roughly that there are over 500 recipes, each well arranged and apparently sound.

Food for Health in Hawaii. By Carey D. Miller, Nutritionist, Hawaii Agricultural Experiment Station, and Professor of Foods, University of Hawaii, and Helen Yonge Lind, Instructor in Home Economics, University of Hawaii. Honolulu: Hawaii Agricultural Experiment Station, 1942. Paper. Pp. 84. Price 50 cents.

The authors of this booklet have directed it to individual housewives—"Is your diet correct nutritionally? Are you buying health for the present and for the future when you order your lunch or pay for your groceries? . . . Check what you eat against statements in this booklet. Can you improve your diet? Here are scientific facts regarding diet, simply and clearly stated." The last sentence quoted well describes the book. In the simplest possible terms, the essentials of a good diet are set forth by means of examples of good and poor diets, which are compared, with the aid of graphs and description, and reference to the recommended daily allowances. Good and poor Chinese, Haole, Hawaiian, Filipino, and Japanese diets are included. Food requirements of infants and children are carefully explained, and examples of good diets given. There is an excellent explanation of the meaning of and need for enriched and whole wheat flour and unpolished rice, rice bran, and "rice middlings." Practical suggestions for obtaining and retaining vitamins in foods, for proper spending of the food dollar, and for planning low-cost meals are offered.

While a good part of the above would be applicable only to the Hawaiian Islands, the style of the book and much of the content could be emulated in books published for similar purposes in the United States. The recipes in the back of the book include directions for cooking rice dishes and other low-cost products which would prove especially useful in the southern states. Only recipes not ordinarily found in cook books are given (some of which, the authors state, may be found in *Aunt Sammy's Radio Recipes*, obtained from Superintendent of Documents, Washington, at 15 cents per copy). Bean sprouts with pork, baked papaya (with variations), hot potato salad (unusually good recipe), rice and sweet potatoes (including full and detailed directions for cooking rice correctly), liver chop "sui," kidney stew, eggplant casserole, tuna and rice custard, tamale pie, avocado with creamed fish, cream of water-cress soup, Indian pumpkin pudding, sweet potato pudding, and banana loaf cake are some of the recipes which could be adapted for use in the United States.

All in all, the authors have done an excellent piece of work which should go a long way toward solving the special nutrition problems which have arisen in the Hawaiian Islands since the outbreak of war as well as those which are always present among persons with limited income, education, or intelligence.

Minimum Adequate Budget Guide. Washington: Family and Child Welfare Division, Council of Social Agencies, 1942. Paper. Pp. 63. Price 40 cents.

This budget is a revision of that issued in 1934. It was prepared by the Budget Committee of the Family Welfare Division of the Council of Social Agencies, under the direction of Mrs. Charles B. Pear, Jr. Others on the committee are: Mrs. Elizabeth O. Grant, District of Columbia Health Department; Mrs. Theodore Leary, American Red Cross; Effie-Marie Ross, District of Columbia Board of Public Welfare; Helen Story, Family Service Association; and Edward L. Ackerman, Secretary, Council of Social Agencies. It is stated in the Introduction that this is not an emergency budget. The Nutrition Committee of the District of Columbia Defense Council has cooperated in the development of the data, and the budget contains items for a minimum standard of living to provide "decency and health" over a long period of time. It is a guide by which to measure needs of the individual and the family. A loose-leaf form is used so that the budget may be enlarged and revised. The present publication includes a summary of budget figures used in the calculations of the budget, some instructions for the adaptation of the budget to the individual case, and budget standards for certain items, including food, fuel, light, refrigeration, clothing, etc.

We note that food costs are given as of March 1942, which means that adjustments will have to be made, notably in the prices of eggs, meat, and butter. However, the quantities of food will be the same, as they are based on figures published by the National Research Council. It is stated that in obtaining figures, those foods which give the most nutritive value for the least cost were priced. Consequently, stewing beef, hamburg steak, lamb forequarter, beef and pig's liver, and other items relatively cheap even with the recent rise in prices, are included. The very useful "Market List for Low-Cost Meals," published by the Bureau of Home Economics, and mentioned before in this JOURNAL, is reproduced. This list provides a means for determining the requirements of each member of the family in order to calculate the total needs of a family for a week.

There are sections on household operation, including an

allowance for blackout materials, and on clothing, health, recreation, etc. Other sections on housing and insurance will be published separately. Although the *Guide* was prepared for social workers in estimating living costs in the District of Columbia, it should be entirely suitable for use by others in other parts of the country.

Medical Parasitology. By James T. Culbertson, Assistant Professor of Bacteriology, College of Physicians and Surgeons, Columbia University. New York: Columbia University Press, 1942. Cloth. Illustrated. Pp. 285. Price $4.25.

Coming at a time when diseases caused by parasitic animals threaten many Americans in the armed forces and when air travel makes it possible to transport infected flies, mosquitos, fleas, or other disease vectors over long distances, and to spread infections by those who are traveling, the publishers hope that this book will fill a definite need both for medical students and practitioners. Like that by the same author reviewed in this JOURNAL for March 1942, the new book is only remotely concerned with nutrition and dietetics, probably because, as the author states, "Little on the role of diet in resistance is yet established in the human helminthiases. . . . In animals, the diet exerts a profound influence particularly on the parasitic infections of the alimentary canal. Somewhat less is known experimentally of the role of the diet in human parasitic disease." He does say that, in the case of the former (hookworm disease), a poor diet is believed to lower resistance, and that in general diets high in protein favor resistance to infections whereas those rich in carbohydrates seem to depress resistance.

In the chapter on prophylaxis there are three paragraphs of general comment on the need for inspection of food and water. Apropos of instructions recently distributed regarding purifying of water in the case of bombings, it is interesting to note Professor Culbertson's statement that "chlorination, as generally carried out, does not kill the cysts of *Endamoeba histolytica* (cause of amebic or tropical dysentery), although usually such cysts are removed by sand filtration or by sedimentation."

The bulk of the book is devoted to a résumé of the significant information on the animal parasites of medical importance—epidemiology, pathology, diagnosis, treatment, and prophylaxis.

Civil Service Examination Announcement

An announcement from the U. S. Civil Service Commission, received December 20, reads as follows:

"The Civil Service Commission has just announced a student dietitian examination to fill positions in the Army Medical Center, Washington, D. C. Sixteen female students will be enrolled in this position on or about September 1, 1943, and an additional sixteen, six months later. The War Department offers a six-month training course in hospital dietetics at the Army Medical Center to those desiring to become graduate dietitians.

"The students will receive subsistence and quarters and a small remuneration during the six-month training period. At the end of the training, students are eligible for assignment to positions as apprentice dietitian for a six-month period at a salary of $1440 a year. Those who successfully complete this apprenticeship will be eligible for retention in the service in the position of staff dietitian at $1800 a year.

"To qualify for the examination for student dietitian positions, applicants must have completed a full four-year college course which included appropriate study in chemistry, biology, social sciences, education, nutrition and dietetics, and institutional management. Applications will be accepted from senior students who expect to complete the required course by February 1, 1944. Provisional appointment may be made prior to completion of the course, but before entrance upon duty, proof of the completion of the course must be submitted directly to the War Department. There are no age limits for this examination.

"Applications must be in the Commission's office in Washington by January 9, 1943. The examination announcement giving full details may be consulted or obtained at first- and second-class post offices (except in the cities where the civil service regional headquarters offices are located, where the forms must be obtained from the regional office) or from the Commission's Washington, D. C. office.

"Applications are not desired from persons engaged in war work unless higher skills could be utilized in the new position. War Manpower Commissions restrictions on Federal appointment of persons in critical occupations in specified areas are given in Form 3989, posted in first- and second-class post offices."

Current Literature

Contributed by Helen Baughman, Dietary Department, Johns Hopkins Hospital, Baltimore; Quindara Oliver Dodge, School of Home Economics, Simmons College, and Women's Educational and Industrial Union, Boston; and the JOURNAL staff.

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 9, October 1942

*The obstructed peptic ulcer. S. A. Wilkinson.—p. 321.
*The efficacy of the drip method in the reduction of gastric acidity. A. Cornell, F. Hollander and A. Winkelstein.—p. 332.
*A consideration of the hepatico-renal syndrome. C. G. Heyd.—p. 348.
*Clinical studies of amino acids. I. The effect of oral administration of a solution of an amino acid mixture on gastric acidity. J. S. Levy and K. A. Siler.—p. 354.

Pyloric Obstruction. Hourly feeding of a 3-ounce bland, non-curding mixture, alternating with drainage, decompresses the distended stomach and assures better nutrition.

Drip Method in Reduction of Gastric Acidity. Milk-NaHCO, aluminum hydroxide gel, and aluminum phosphate gel are effective antacids when administered by continuous drip; the last is the most effective. Other procedures used were inadequate.

Hepatico-Renal Syndrome. In biliary tract post-operative liver deaths secondary renal degeneration often appears. Dietary restrictions or chronic illness result in an insufficient amount of protein in the liver. High-protein, high-carbohydrate, low-fat diets, preoperatively, reduce lipid concentration in the liver and give maximum protection. An adequate dose of vitamin K before operation prevents excessive bleeding and helps liver function.

Amino-Acids and Gastric Acidity. Amigen is an effective buffering agent when introduced into the stomach. This mixture can be given to normal individuals without discomfort. It may be used in the clinical management of peptic ulcer, even in the presence of bleeding.

AMERICAN JOURNAL OF DISEASES OF CHILDREN

Vol. 64, October 1942

*Peptic ulcer in childhood. A. B. Newman.—p. 649.

Peptic Ulcer in Childhood. The occurrence of peptic ulcer in children is being reported with increased frequency; the problem of diagnosing the cause for "obscure abdominal pain in children" is difficult, and the cause remains obscure just as in adults. The greater frequency of the disease in low-income groups suggests that dietary deficiency is a factor. Younger children present the most difficult diagnostic problem; best results are found by roentgenographic diagnosis. Underweight, familial tendency, night pain or prebreakfast pain, and symptomatic relief from pain with ingestion of food or alkali are all generally characteristic of peptic ulcer in children. Subtotal gastrectomy may be necessary but the prognosis after operation has not been established.

AMERICAN JOURNAL OF THE MEDICAL SCIENCES

Vol. 204, October 1942

*The effect of food and alkali on the absorption and excretion of sulfonamide drugs after oral and duodenal administration. O. L. Peterson and M. Finland.—p. 581.

Effect of Food on Absorption of Sulfonamide Drugs. Food delays the absorption of sulfanilamide but does not diminish the amount excreted in the urine. Sulfadiazine is absorbed more slowly but more completely after a meal. Alkali increases the amount of drug absorbed when it is given with sulfadiazine after a meal. Sodium bicarbonate hastens the absorption of sulfadiazine when given on an empty stomach, but does not increase the amount absorbed. The absorption of sodium sulfadiazine is delayed and is less complete if it is given after a meal.

AMERICAN JOURNAL OF PUBLIC HEALTH AND THE NATION'S HEALTH

Vol. 32, October 1942

*Protection of water and food supplies in an emergency. G. E. Arnold.—p. 1097.
*Field equipment for food inspectors. F. A. Korff and E. Kaplan.—p. 1110.

Protection of Water and Food Supply. Public health people are facing many problems resulting from the war. Shortage of materials and personnel has resulted in extensive substitution of foods, containers and processing methods. Inspection is difficult. Specific suggestions are given for the protection of water and food in emergencies.

Field Equipment for Food Inspectors. A description has been given of the methods and equipment used by food inspectors of the Baltimore City Health Department for making selected analytical examinations in the course of inspections of food establishments.

ARCHIVES OF INTERNAL MEDICINE

Vol. 70, October 1942

*Observed course of diabetes mellitus and inferences concerning its origin and progress. A. R. Colwell.—p. 523.
*Cinchophen gastric ulcers in chicks. G. Cheney.—p. 532.

Course of Diabetes Mellitus. Evidence presented favors the idea that the course of diabetes mellitus begins at birth, that inherent features predetermine the average rate of its progress, and that its course is approximately half run before the disease is recognized. Some years after recognition, the disease may show progressive and permanent improvement. Characteristic of the disease is its tendency to grow more severe the longer it exists, as is substantiated by the increased insulin requirements. These conclusions

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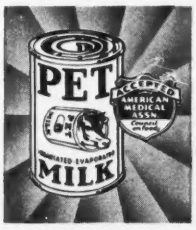

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were drawn from a study of 166 diabetics ranging in age from 6 to 82 years.

Absence of Dietary Factor as Cause of Gastric Ulcers in Chicks. The existence of a dietary factor, the absence of which will cause gastric ulcers in chicks, is well recognized by persons interested in the nutrition of poultry. The lesions produced by dietary means differ only in severity from those produced by cinchophen. There is no positive evidence that the mechanism of ulcer production in chicks is comparable to that in humans; however, in both the site of the ulcer is the muscular portion of the stomach where highly acid gastric juice is found. The dietary factor which prevents ulcers in chicks is termed the anti-gizzard erosion factor; it is fat-soluble, and occurs in close association with vitamin K in alfalfa, many cereals, fish oils, liver and fresh milk. It has been suggested that this factor be designated "vitamin U."

ARCHIVES OF PEDIATRICS

Vol. 54, October 1942

*Lipoid nephrosis complicated by pneumococcus peritonitis. J. M. Dobbins and H. Rappaport.—p. 646.
*Enriched white bread in pediatrics. J. A. Tobey.—p. 653.

Nephrosis Complicated by Pneumococcus Peritonitis. Nephrosis complicated by pneumococcus peritonitis was successfully treated by operation, high protein, high carbohydrate and low-fat diet, blood transfusion and thyroid extract.

Enriched White Bread. A uniform, dependable source of the vitamins of the B complex, and of iron and calcium, enriched white bread is valuable in pediatrics because it is readily digested without excess roughage and is an economical source of energy. It may furnish 40 per cent of the caloric intake if the remainder of the diet is made up of protective foods.

BRITISH MEDICAL JOURNAL

No. 4268, October 24, 1942

*Vitamins and capacity for work. Editorial.—p. 485.

No. 4269, October 31, 1942

*Nutritional iron deficiency anemia in wartime. L. S. P. Davidson, G. M. M. Donaldson, M. J. Dyar, S. T. Lindsay and J. G. McSorley.—p. 505.
*Vitamin C and resistance to infection. Editorial.—p. 518.

Vitamins and Capacity for Work. It has been reported that additional vitamin B complex would benefit the working capacity in occupations where fatigue is due primarily to fatigue of the central nervous system. In Britain with the introduction of flour of 85% extraction the vitamin B_1 intake has improved but with heavier manual labor, longer hours of work and increased nervous strain even this may not be optimal. The effects of rationing of meat and milk on riboflavin and nicotinic acid intake must be carefully watched.

Iron Deficiency Anemia in Wartime. After three years of war there appears to be little significant change in hemoglobin levels of infants studied but a 10% fall has been demonstrated in the case of school children. Rationing and unavailability of certain foods seem to account for the difference. Suggestions for a remedy include improved school lunches, iron medication or the addition of iron to some suitable article of food such as bread.

Vitamin C and Resistance to Infection. Experiments conducted at a large institution for boys showed that when the regular diet was supplemented with vitamin C the average number of days spent in the sick room due to infective conditions was 2.5 as compared to 4.98 for the controls. While the duration of the common cold was not shortened that of tonsillitis was shortened from 16.7 to 10 days. Laboratory work is less conclusive.

BULLETIN OF THE JOHNS HOPKINS HOSPITAL

Vol. 71, October 1942

*Myocardial necroses in rats on a potassium low diet prevented by thiamine deficiency. R. J. Follis.—p. 235.

Myocardial Necroses in Rats. In rats fed a thiamin and potassium-deficient diet, no myocardial necrosis was produced such as is seen on a potassium-deficient diet alone. There is probably a "protective effect" in this combination. Changes in the kidneys characteristic of potassium deficiency developed in all animals on potassium or potassium plus thiamin-deficient rations.

CANADIAN MEDICAL ASSOCIATION JOURNAL

Vol. 47, October 1942

*The association of deficiency of vitamins B_1 and E during pregnancy. E. Shute.—p. 350.
*Canada approved bread. Editorial.—p. 467.

Deficiency of Vitamins B_1 and E During Pregnancy. In 580 successive, unselected pregnant women, the incidence of B_1 deficiency neuritis was 15%; in 957 gynecological cases it was 4%. Pregnancy increases the requirement of B_1 about 4 times. In 172 of these pregnant women showing no signs of vitamin E deficiency the incidence of neuritis was only 10%, but in the other 408 with E deficiency the neuritis incidence was increased to 24%. This correlation is quite common, and is another argument for the preservation of the germ in milling cereal grains.

Canada Approved Bread. "Canada approved bread" is a new form made available in April 1942. The flour is entirely extracted from the wheat berry, and the B complex vitamins, especially B_1, as well as important minerals are retained. It contains $2\frac{1}{2}$ times as much B_1 as ordinary commercial white bread.

FOOD RESEARCH

Vol. 7, September-October 1942

*An analytical study of cucumbers and cucumber pickles. L. J. Camillo, C. A. Hoppert and F. W. Fabian.—p. 339.
*Some cooking qualities of homogenized milk. I. Baked and soft custard. R. E. Carr and G. M. Trout.—p. 360.
*Digestion of beef by papain. G. Y. Gottschall and M. W. Kies.—p. 373.
*Ascorbic acid content of some canned grapefruit juices prepared under various processing conditions. W. W. Floyd and G. S. Fraps.—p. 382.
*Effect of freezing rate on quality of broiled steaks. D. E. Brady, P. Freir and C. W. Hickman.—p. 388.
*Effect of orange and lemon juices on activity of proteolytic enzymes. T. C. Manchester.—p. 394.
*Nutritional value of autoclaved and raw soybeans, supplanted only by vitamins and salt mixture. F. M. Baldwin and E. J. Movitt.—p. 403.
*Cystine content of wheat and its quantitative determination. C. J. Gubler and J. E. Greaves.—p. 405.

Cucumbers. This is the report of chemical and biochemical analyses of samples of fresh cucumbers and of the pickles made from cucumbers. Comparative data are presented on the protein content of the pickles and the fresh cucumbers, the effect of fermentation on the carbohydrate content and comparative data on the calcium and phosphorus content of the fresh and the pickled product, likewise the iron, copper, carotene, thiamin, riboflavin and ascorbic acid content. It is implied that the variety of cucumber, climatic conditions and soil fertility influence the carotene and ascorbic acid content of commercial pickles; likewise the method of processing.

Homogenized Milk in Custards. The effect of homogenization of milk on some of its cooking properties was studied by means of baked and soft custards. The cooking time for custards made with homogenized milk was found to be from 15 to 20 minutes longer than for custards made with similar unhomogenized milk because the rate of heat penetration was more rapid in the latter. Baked custards made with homogenized milk gave significantly higher standing-

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index values, both when measured immediately after removal from the cup and when measured after standing for three hours at room temperature, than those made with unhomogenized milk. This would indicate better gel formation in the former. The firmness of the custards was measured both objectively by means of a "Curd Tension Meter" and subjectively by means of the judges' opinion. A close correlation existed between the two methods inasmuch as the custards made with homogenized milk were rated firmer in both cases. The amount of syneresis upon standing for custards made with homogenized milk was significantly less than for custards made with unhomogenized milk. Soft custards made with homogenized milk gave a more viscous custard than those made with unhomogenized milk, according to the MacMichael viscometer. The judges' opinion on the palatability of the custards made with the two types of milk showed no preference in the baked custards, but a decided preference for soft custards made with homogenized milk. It is concluded that both baked and soft custards made with homogenized milk are superior in quality to those made with unhomogenized milk.

Digestion of Beef by Papain. Meat is digested by papain extensively and rapidly at 55 and 75°C. (131 and 167°F.) but very slowly at room temperature. At 55°C. papain is stable for 28 hours in the presence of meat. At 100°C (212°F.) papain is rapidly destroyed in the presence of meat so that there is very little digestion above 100°C. Papain does not penetrate solid pieces of meat at room temperature. When beef is ground the rate of digestion by papain is much increased. The rate of proteolysis is not increased by previous cooking of either ground or unground meat. In the usually recommended procedure for tenderizing meat, unground meat is painted with papain and then cooked. The experiments performed show that under such conditions papain would not penetrate very far into the meat, and the papain on the surface would be inactivated by heat before much digestion could take place.

Ascorbic Acid Content of Grapefruit Juices. Canned grapefruit juice averaged 33.7 mg. ascorbic acid per 100 gm. in 109 samples, compared with 41.2 mg. in 21 samples of fresh raw juice from first-grade, tree-ripened fruit. Freshly extracted juice did lose 11.2% of its ascorbic acid if allowed to stand 5 minutes before pasteurizing and 34.7% in 30 minutes. Juice from culls contains less ascorbic acid than first-grade fruit. Freezing also decreases the percentage in the juice. Juice prepared with machines using corrugated rollers or a rotary grater contained a little more ascorbic acid than that prepared by screen pressing or hand reaming.

Broiling Frozen Steaks. The smallest cooking loss (drip and evaporation) occurred in the quick-frozen steaks broiled while frozen and the largest loss occurred in the slow-frozen steaks, thawed before broiling. It appears desirable that thin cuts of meat should be quick-frozen and cooked while still frozen to prevent a high loss in evaporation and drip even though there is no apparent effect on the palatability of steaks prepared this way.

Effect of Citrus Juices on Peptic Activity. Lemon juice contains a relatively small amount of a proteolytic enzyme capable of the slow digestion of protein. The experimental data indicate that the observed action of citrus juices on peptic activity was not due to ascorbic acid or to ascorbic acid plus iron.

Nutritional Value of Autoclaved and Raw Soy Beans. In a diet wherein the soy bean constituted the only source of foodstuff (a level of 40.5% protein) steam autoclaving increased the nutritional value of the protein 62% above the raw bean protein. Whereas most investigators find that the raw bean supports little or no growth at all, the raw soy bean in this type of diet produced appreciable growth.

Cystine Content of Wheat. Seventeen varieties of wheat grown on the same soil and under the same conditions were analyzed and found to contain an average of .364% of cystine. This corresponds to .097% of cystine-sulfur and represents 54.4% of the average total sulfur. A probable variation in cystine was found between varieties as well as between wheats grown under varying cultural conditions, and a positive correlation was found between cystine and sulfur as well as between cystine and nitrogen.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 120, October 17, 1942

*Handbook of nutrition: XIV. Unusual foods of high nutritive value. R. M. Wilder and T. E. Keys.—p. 529.

Vol. 120, October 24, 1942

*Proteinuria in toxemia of pregnancy. W. J. Kieckmann and S. Kramer.—p. 590.

Anticipation in the inheritance of diabetes. R. T. Woodyatt and M. Spetz.—p. 602.

*Handbook of nutrition: IX. The trace elements in nutrition. M. E. Shils and E. V. McCollum.—p. 609.

*Dietary hepatic cirrhosis. Editorials.—p. 624.

Vol. 120, October 31, 1942

*Genesis of peptic ulcer in man. S. Wolf and H. G. Wolff.—p. 670.

*Some physiologic aspects of the use of sea water to relieve dehydration. R. F. Bradish, M. W. Everhart, W. M. McCord and W. J. Witt.—p. 683.

*Handbook of nutrition: XII. Foods of plant origin. L. A. Maynard.

Vol. 120, November 14, 1942

*Jejunal ulcers and recurrent hemorrhages after gastrectomy for peptic ulcer. E. D. Kiefer.—p. 819.

*Handbook of nutrition: XV. The preservation of the nutritive value of foods in processing. E. F. Kohman.—p. 838.

*Proneness to accident. Editorials.—p. 841.

Vol. 120, November 21, 1942

*Handbook of nutrition: XIX. Feeding of healthy children. P. C. Jeans.—p. 921.

Unusual Foods. The world is full of food potentialities, and the anticipated demands for foods possessing superior nutritive qualities call for a re-evaluation of world supplies of food. The re-evaluation, if based on the science of nutrition, should reveal the means of providing all that is required for the optimal nutrition of all the populations of the globe, which well may be prerequisite for world security and order.

Proteinuria. The diet should contain approximately 2000 calories. It is adjusted so that the maximum weight gain is 7 to 8 kg. (less than 225 gm. a week) for the whole pregnancy, by limitation primarily of the fats. The protein intake should be 80 gm. or more, derived chiefly from meat, milk and eggs. The proper selection of foods should be relied upon for an adequate vitamin intake rather than the ingestion of pure vitamins. Vitamin E or alpha-tocopherol has not been of value in preventing fetal death from placental infarction or *abruptio placentae*. If edema occurs, the diet must contain only a negligible amount of sodium and chloride. Salt or baking powder cannot be used in the preparation of foods or the baking of bread and rolls. Salt-free butter is used. No crackers, pretzels, cheese, sausages, salted meats and fish, prepared salad dressings, canned soups, beer or "patent medicines" for the relief of gastric distress are permitted. There is a very low sodium content in flour, cream, macaroni, sugar, potatoes, squash, parsnips, lettuce, kidney beans, tomatoes and most vegetables, and cereals. Eggs, meat, milk, beets, Brussels sprouts, corn, mushrooms, peas and spinach are reasonably low in sodium content and may be consumed in moderate amounts. Boiling the meat will remove most of the sodium. The broth must be discarded.

Trace Elements. Six trace elements, namely iron, copper, iodine, manganese, cobalt and zinc, have been demonstrated to be essential to animal life. Our knowledge of the human requirements for manganese, cobalt and zinc is

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so meager that the possibility of deficiency of any one of them occurring cannot be dismissed, although, because of their broad distribution in nature and probably small requirement, the likelihood of any acute or widespread deficiency appears remote. The essential trace elements and the other trace elements which occur in living matter but whose importance is unknown stand as a challenge to nutritionists and physiologists. The indispensable "traces," just as the vitamins, appear to be keys to fundamental physiologic processes the mechanisms of which are either only partially understood or in most cases completely unknown.

Hepatic Cirrhosis. The accumulated data led to the tentative conclusion that under the conditions of the nutritional experiments as described, the dietary hepatic injury was due to two factors, an insufficient protein intake supplemented by an insufficient amount of some unidentified vitamin B complex factor. The closest analogy to these experimental conditions in human pathology would be in alcoholic addicts. Low-protein intake combined with an insufficient amount of vitamin B is a prominent feature of the daily diet of most persons addicted to alcohol. The assumption of a specific toxic action of alcohol becomes superfluous in this analogy, as it is superfluous in the etiology of pellagra or beriberi due to alcoholic addiction. The recent claim of the beneficial effect of a "highly nutritious diet" supplemented by vitamin B concentrate on alcoholic cirrhosis in man is an apparent confirmation of their suggested theory.

Peptic Ulcer. Emotional conflict involving anxiety, hostility and resentment was accompanied by accelerated acid secretion, hypermotility, hyperemia and engorgement of the gastric mucosa resembling "hypertrophic gastritis," associated with gastro-intestinal complaints of the nature of heartburn and abdominal pain. Intense sustained anxiety, hostility and resentment were found to be accompanied by severe and prolonged engorgement, hypermotility and hypersecretion in the stomach. In this state mucosal erosions and hemorrhages were readily induced by even the most trifling traumas, and frequently bleeding points appeared spontaneously as a result of vigorous contractions of the stomach wall. It appears likely that the chain of events which begins with anxiety and conflict and an associated overactivity of the stomach, and ends with hemorrhage or perforation, is that which is involved in the natural history of peptic ulcer in human beings.

Sea Water to Relieve Dehydration. The time during which man can be deprived of water intake is vastly shorter than that during which he can be deprived of food and maintain life. The old rough general rule, 3 minutes without air, 3 days without water or 30 days without food, applies. If the chance for survival can be widened from the water deprivation limit of 3 days to the food deprivation limit of 30 days, then indeed is there a tremendous increase of survival odds. The question has been raised intermittently and with increasing frequency lately as to whether sea water can be used in any way whatever to satisfy the minimum water needs of the body. According to physiologic views, the site of water and salt absorption is in the distal portion of the small intestine and the colon. It would seem then that, regardless of into which end of the alimentary canal salt water is introduced, there would be little if any difference in the physiologic effect. The drinking of sea water results in the absorption of salt as a hypertonic solution and necessitates the excretion of the salt eventually at the expense of body fluids. This excretion will be through the kidneys, as pointed out previously. It has been shown by both subjective and objective observations that the colon will not concentrate sea water and thus make water available to the organism. Therefore, by the same token, rectal instillations of sea water will not alleviate the symptoms of water deprivation.

Plant Foods. Over 50% of the American diet consists of foods of plant origin. Cereals also provide a third or more of the protein of the American diet. While this protein is not so high in biologic value as that of animal products, combinations of cereal and animal protein provide a diet of excellent protein quality. Important amounts of phosphorus, iron, copper and other minerals and of certain vitamins are supplied by cereals. Generalizations here are of limited value, however, because of the differences among cereals and the losses which result on milling. Among the breakfast food cereals, oatmeal and rolled oats, the principal forms in which oats are consumed, rank first both in quantity eaten and in nutritive value. Rice supplies slightly more than 1% of the calories of the average American diet, the annual per capita consumption being approximately 5 lb. White, or milled rice, the form in which it is mostly consumed, is essentially an energy food. Over 50% of the minerals and 85% of the thiamin of the entire kernel are lost in milling. In contrast, brown rice contains 0.7 to 0.9 mg. thiamin per 100 gm. and is nutritionally superior in other respects also. The consumption of rye, mostly as milled rye flour in bread, is less than 3 lb. per capita annually.

It is evident that a larger consumption of dried legumes, particularly in place of refined cereals, would improve the diet in several respects. Their cheapness commends them especially for use in low-cost diets.

According to statistics, 305,200,000 bushels of white potatoes were consumed in the United States in 1939, approximately 138 lb. per capita. Thus potatoes provide approximately 4% of the total calorie needs on the average. For many people, however, particularly the lower income groups, potatoes make up a much larger part of the diet than this average figure indicates, and their nutritive value is of added concern accordingly.

Tomatoes are one of the most important protective foods, both because of their special nutritive values and because of their widespread production. They rank third in quantity among the vegetable crops, being exceeded only by white and sweet potatoes. Tomatoes are outstanding as a source of ascorbic acid, having an average content of 25 mg. per 100 gm. for the summer-grown products. Tomatoes are rich in carotene, ripe tomatoes, fresh or canned, containing approximately 1000 I.U. vitamin A per 100 gm. A 5-oz. glass of canned juice will supply about one-fifth the daily adult allowance. On the basis of the available figures, tomatoes in the amounts consumed cannot be considered as an important source of any of the B group of vitamins or of the mineral elements with the possible exception of iron.

The calcium contribution of green leafy vegetables becomes particularly important in diets containing little milk or cheese, and all are rich sources of carotene and thus make an important contribution to the vitamin A content of the diet. Most of the green leafy vegetables are excellent sources of riboflavin, the leaves being much richer than the stems. A serving of cooked turnip or beet greens will supply nearly 25% of the adult daily allowance.

The present per capita consumption of fruits, calculated on the fresh basis, was 221 lb. in 1939. Of this total, 75% was consumed fresh and 15% canned, and the remainder divided between dried fruits and juices. Apples outranked all other fruits, representing over one-fourth of the total consumption. But citrus fruits as a class exceeded apples by 50% or more. Fruits are of outstanding value because of their content of certain vitamins and minerals.

Jejunal Ulcers. The treatment of a postoperative jejunal ulcer is a difficult problem. Patients who do not show a penetrating crater by roentgen examination and some who do can be relieved by a rigid ulcer regimen consisting of bed rest, antacids, a smooth diet, mental relaxation and the elimination of tobacco and alcohol. A diet high in vitamins, particularly vitamin C in cases presenting

Munitions worker

THIS MAN in white overalls is a Doctor of Chemistry testing a sample of milk.

Milk's prominent place in the national diet program recommended by the National Nutrition Conference for Defense, makes it an important munition in America's arsenal.

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These contributions are not merely happy accidents. We have men in our laboratories who are making it their lifeworks to break milk down into its innumerable fractions. To find out everything man can learn about milk.

Out of this research has come Borden's unique Quality Control. This rigid system of laboratory checks and controls safeguards the purity and quality of every Borden product—*in every phase of production!*

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Borden —BETTER NUTRITION THROUGH MILK RESEARCH

a hemorrhagic tendency, and which eliminates the possibility of traumatic excoriation of the jejunal mucosa, seems to be a logical measure.

Food Processing. Modern methods of food distribution supply us with vegetables and fruits of numerous varieties in many forms. Vegetation extracts minerals from the earth, usually in suitable proportions, and synthesizes our vitamin supply. Until subjected to heat, fruit and vegetables are live tissue and as such constantly undergo changes, some of which are detrimental. Methods have been devised to limit such changes during storage and the processing of frozen, dehydrated or canned foods, but work still remains to be done to ascertain more definitely the extent of changes that take place for each type of commodity under the various conditions to which it may be subjected and to find ways of further minimizing undesirable changes.

Accidents. Accident proneness may be an innate characteristic of some people and a personal phenomenon independent of any question of responsibility, conscious action or blameworthiness. Those who sustain an undue number of one kind of accident also sustain an undue number of other kinds. Accident proneness is a relatively stable quality obeying fairly definite laws. Moreover, those who are most often ill tend, on the whole, most often to have accidents, indicating that the prevention of accidents may depend to a considerable degree on the prevention of sickness and emphasizing further the need for greater attention to the industrial health program as a whole.

Feeding of Children. Despite all our modern knowledge of infant nutrition and all the current refinements of artificial feeding, feeding at the breast of the mother remains an ideal procedure. This is true despite the fact that human milk contains only a bare minimum of most of the nutritional essentials and the fact that the body composition of the breast-fed infant departs widely from that which preceded and that which follows, in contrast to the body composition of the artificially-fed baby, which maintains more closely a smooth continuance of the fetal and post-infancy curve.

Vitamin D is needed early by all babies, whether breast or artificially-fed. Vitamin C is needed early by artificially-fed babies and is a harmless safeguard for the breast-fed baby. No need for vitamin A from special sources exists. If current custom is in error, it errs in the direction of giving too much vitamin D and too little vitamin C and in not giving either of these materials early enough. Additional supplementary foods should be given at not later than 4 months of age to both breast and artificially-fed babies. One important function of these supplements is to supply iron and vitamins of the B group. Another function is to accustom the baby early to variety in flavor and texture for the promotion of good feeding habits. Anorexia and poor feeding habits, which occur so frequently in older children, often have their origin in feeding mismanagement in infancy.

Though observers do not agree too well as to the particular nutritional or dietary factors responsible for dental caries, nearly all are of the opinion that one or more dietary components may be responsible, either by lack of those which are essential or by the presence of some considered harmful. On such a basis, dental caries is our most widespread nutritional scourge. At least three nutritional essentials deserve special emphasis in childhood: vitamin D, protein and calcium. "Vitamin D is required throughout the growth period, a fact extensively overlooked." Milk, as our only constant, good food source of calcium, is not taken in sufficient quantity by a large number of children. Protein deficiency is much more common than is generally realized. Though thiamin is obtained by a large proportion of children in quantities scarcely meeting their needs, the remedy lies in better food selection, not in thiamin medication. "Vitamin A from special sources is not needed by the normal child."

JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 144, August 1942

*Nicotinic acid deficiency in dogs. A. E. Schaefer, J. M. McKibbin and C. A. Elvehjem.—p. 679.

Vol. 145, September 1942

*Studies on hemorrhagic anemia in dogs. J. M. McKibbin, A. E. Schaefer, C. A. Elvehjem and E. B. Hart.—p. 107.

*The non-specificity of thiamine in fat synthesis. F. W. Quackenbush, H. Steenbock and B. R. Platz.—p. 163.

*The influence of lactose and its hydrolysis products on the absorption of calcium. E. Roberts and A. A. Christman.—p. 267.

Nicotinic Acid Deficiency in Dogs. Uncomplicated nicotinic acid deficiency may be produced on highly purified casein-sucrose ration supplemented with thiamin, riboflavin, pyridoxine, pantothenic acid, and choline. This ration seems suitable for the assay of food materials for their nicotinic acid content. The nicotinic acid requirement for adult dogs ranges from 200 to 225γ per kilo of body weight per day and for young puppies from 250 to 365γ. Sulfapyridine feeding inhibits the response of the nicotinic acid-deficient dog to nicotinic acid, nicotinamide, dried liver, and liver extract powder. This inhibition is overcome by fresh liver.

Hemorrhagic Anemia in Dogs. Adult dogs rendered anemic by phlebotomy failed to respond to iron and copper when high levels of cobalt were added to the whole milk ration. Rapid regeneration of blood occurred when this ration was further supplemented with whole dried liver or liver extracts. The activity of liver preparations could not be wholly replaced by synthetic B-vitamins, bile salts, cysteine, uropterin concentrates, and high levels of iron when fed individually but the result was satisfactory when these supplements were fed together. The blood plasma iron was not mobilized as always occurs with liver therapy. Dogs receiving a highly purified ration supplemented only with synthetic vitamins retained their ability to regenerate normal blood after subjection to severe phlebotomy for many months.

Thiamin in Fat Synthesis. Thiamin did not prevent rapid losses of total fat in rats on a diet deficient in other B-vitamins. Thiamin was no more effective than other B-vitamins in increasing total fat content of rats. The effectiveness of a supplement in restoring normal fat synthesis in deficient rats is determined by the completeness with which it supplies essentials lacking in body tissues as well as in the basal diet.

Lactose and Calcium Absorption. The presence of lactose or its hydrolysis products, glucose and galactose, did not increase the rate of calcium absorption. In higher concentration, lactose apparently inhibited calcium absorption.

JOURNAL OF CLINICAL ENDOCRINOLOGY

Vol. 2, October 1942

*Disposal of glucose at high and normal blood sugar levels under action of insulin. P. O. Greeley, H. E. Martin and L. F. Hallman.—p. 590.

Disposal of Glucose. In 4 diabetic patients, 3 depancreatized dogs, and 3 depancreatized rabbits, more glucose disappeared under the action of insulin at a high blood-sugar level than at the normal physiological level. The difference occurred with insulin and possibly may not occur without insulin. Glucose which disappeared at high blood-sugar levels with insulin, could not be fully accounted for by increased liver or muscle glycogen or by oxidation. Liver glycogen in depancreatized animals actually dropped at high blood-sugar levels. These results show that there is not a strict overflow mechanism at high

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Onion, finely chopped ..... 3 tablespoons
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Instant Ralston ..... ⅓ cup (dry)
Milk ..... ½ cup
Mix all ingredients together thoroughly. Shape into patties.
Cook slowly in hot fat, turning to brown both sides.
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blood-sugar levels with insulin because of increased insulin-carbohydrate ratio at such levels.

JOURNAL OF NUTRITION

Vol. 24, October 1942

*The effect of glucose and sucrose on the respiratory quotient and muscular efficiency of exercise. M. Wrightington.—p. 307.
*The thiamine requirement of the albino rat as influenced by the substitution of protein for carbohydrate in the diet. W. W. Wainio.—p. 317.
*The respiratory quotient of the liver. A. H. Chambers.—p. 331.
*Sensory neuron degeneration in pigs. M. M. Wintrobe, M. H. Miller, R. H. Follis, Jr., H. J. Stein, C. Mushatt and S. Humphreys.—p. 345.
*Calcium, phosphorus and nitrogen metabolism of young college women. H. McKay, M. B. Patton, M. A. Ohlson, M. S. Pittman, R. M. Leverton, A. H. Marsh, G. Stearns, and G. Cox.—p. 367.
*Soybean protein as a source of amino acids for the chick. H. J. Almquist, E. Mecchi, F. H. Kratzer and C. R. Grau.—p. 385.
*Body fats in rat acrodynia. F. W. Quackenbush and H. Steenbock.—p. 393.
*Nutritional studies on powdered chicken feathers. J. I. Routh.—p. 399.

R. Q. and Muscular Efficiency. The rest R.Q.6 to 8 hours after the last meal with no control of diet varies from 0.69 to 1.00. The work and recovery, and excess R. Q. values increase if their corresponding rest R. Q. is below 0.88 for pre-sugar experiments or below 0.92 for post-sugar experiments, and decrease if their rest R. Q. is above these figures. These data are interpreted by hypothesis that when fat is in excess it is converted to carbohydrate and stored, and when carbohydrate is preponderant, the reverse occurs. Sucrose raises the R. Q. higher than do glucose corn syrups. Following the ingestion of glucose or sucrose, the excess R. Q., when corrected for the increase due to sugar alone, shows that more glucose than sucrose is metabolized during work. No significant changes in muscular efficiency occur after the ingestion of either of the sugars.

Thiamin Requirement of the Rat. The average daily thiamin requirement of adult male rats maintained in approximate energy equilibrium at 26°–30°C. on a diet containing 64% sucrose, 20% casein, and 10% hydrogenated cottonseed oil plus cellulose flour, salts and pure vitamin supplements has been found to be 33 μg. On a diet high in protein, nine of the ten rats studied had an average requirement of 20 μg. A comparison of the two values demonstrates a 39% reduction in the daily requirement. The increase in the urinary pyruvate excretion which indicates a possible disturbance in intermediary carbohydrate metabolism has been used as the index of subacute thiamin deficiency.

Respiratory Quotient of Liver. The R. Q. of the liver was found to have a value greater than 0.70 and to be not significantly different from the R. Q. of the entire animal when previously fed a meat diet. The R. Q. of the liver was found to be lower than 0.70 in animals previously starved or fed a high fat diet.

Sensory Neuron Degeneration in Pigs. Young pigs fed a ration of crude casein, lard, sucrose, and a salt mixture, supplemented with thiamin, riboflavin, nicotinic acid, pyridoxine, choline, calcium pantothenate and cod liver oil, developed normally and exhibited no changes in the nervous system. Pigs similarly fed but receiving B-vitamins which failed to include calcium pantothenate or pyridoxine, developed an abnormal gait and showed degenerative nerve changes. In animals whose supplements did not contain calcium pantothenate, a subacute inflammation of the colon was also found, while in those deprived of pyridoxine epileptiform convulsions and anemia were observed in addition to the nerve changes. When thiamin was not furnished no changes in the nervous system were observed but omission of choline was associated with some abnormality of gait in three animals and lesions of the nervous system in one. Both pyridoxine and pantothenic acid are considered necessary in maintaining the integrity of the nervous system in the pig. Whole liver is an excellent source of both of these substances and different brands of yeast contain 30 to 75 μg. pyridoxine per gram and 30 to 200 μg. pantothenic acid.

Calcium, Phosphorus and Nitrogen Metabolism of Women. That the type of diet was one of the factors influencing calcium retention was shown by the larger percentage of calcium retentions of subjects on controlled diets compared with those on their customary self-chosen diets, when the calcium intakes were similar. Calcium, phosphorus and nitrogen retention relationship was similar to the relationship commonly accepted.

Soy Bean Protein and Chick Nutrition. Raw and heated soy bean protein was studied as the sole source of protein in the chick diet. The principal growth-limiting deficiency in raw soy bean protein is that of methionine. Heated soy bean protein is slightly deficient in methionine for the chick at the 20% protein level, but is complete in respect to all other amino-acids required by the chick.

Body Fats in Rat Acrodynia. During the development of acrodynia in rats on a low-fat diet, the crude fatty acids decreased in amount but increased in iodine number. The non-curative single supplements, pyridoxine and pantothenic acid, produced no significant alterations in the quality or quantity of fat. Supplements which cured or alleviated the dermal symptoms, viz., linoleic ester, rice bran concentrate, or pyridoxine plus pantothenic acid, produced increases in total fat and decreases in iodine number. Fatty acids from acrodynic rats or from rats which had been cured with rice bran concentrate did not cure acrodynia. The studies did not reveal the mechanism through which pyridoxine, pantothenic acid and linoleic acid protect against acrodynia.

Nutritional Value of Powdered Feathers. Powdered hen's feathers are capable of supporting moderate growth in the young rat when they are supplemented with tryptophane, methionine, histidine and lysine and fed in a diet otherwise adequate. When 5 or 8% of casein was used as a supplement instead of these amino-acids the growth rate was essentially the same. When 3% casein was used the rats grew only about one-fourth as rapidly. Powdered wool supplemented with 5 or 8% casein gave practically identical results; with 3% casein the powdered wool diet produced a definitely higher growth rate than the diet containing powdered feathers.

JOURNAL OF PEDIATRICS

Vol. 21, October 1942

*Vitamin A absorption and its relation to intestinal motility in fibrocystic disease of the pancreas. L. J. Flax, M. Barnes and J. L. Reichert.—p. 475.
*Obesity in children. I. P. Bronstein, L. J. Halpern and A. W. Brown.—p. 485.
*Bone development in pre-school children. C. L. Wilbur.—p. 504.
Food contaminations and poisonings. Part II. G. M. Lyons.—p. 534.

Vitamin A and Fibrocystic Disease of the Pancreas. Studies on vitamin A absorption in a patient with fibrocystic disease of the pancreas show a close relationship with gastro-intestinal tone and motility. Prostigmine is suggested as an addition in the therapy of the disease as a means of increasing the absorption of vitamin A.

Obesity in Children. No appreciable loss of weight was effected in a series of 46 children, regardless of type of treatment used. Administration of diets between 1000 and 1500 calories with restricted fluid intake and adequate vitamins, thyroid extract and amphetamine sulfate alone or in combination gave a small initial weight loss.

Bone Development in Preschool Children. Since tables of bone development show wide variations in the "normal," there might be some question as to their accuracy as gauges of the health of the growing child. This study would tend to indicate one of three conclusions: (1) there is an as yet unrecognized racial or hereditary factor which has to do

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PROTEIN	6.00 Gm.	31.20 Gm.
CARBOHYDRATE	30.00 Gm.	66.00 Gm.
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CALCIUM	0.25 Gm.	1.05 Gm.
PHOSPHORUS	0.25 Gm.	0.903 Gm.
IRON	10.5 mg.	11.9 mg.

	Dry Ovaltine	Ovaltine with milk*
COPPER	0.5 mg.	0.5 mg.
VITAMIN A	1500 U.S.P.U.	2953 U.S.P.U.
VITAMIN D	405 U.S.P.U.	432 U.S.P.U.
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RIBOFLAVIN	0.25 mg.	1.28 mg.

*Each serving made with 8 oz. milk; based on average reported values for milk.

with bone development; or (2) standards of adequate intake of calcium, phosphorus, vitamin A and/or vitamin D should be raised; or (3) retarded osseous development is an exceptionally fine indicator of inadequacies in diet.

MILBANK MEMORIAL FUND QUARTERLY

Vol. 20, October 1942

*Diets of a group of aircraft workers in Southern California. D. G. Wiehl.—p. 329.

*Medical evaluation of nutrition status. XIII. The experimental error of determinations of ascorbic acid in plasma by micromethod of Mindlin and Butler. G. W. Beebe.—p. 389.

Diets of Aircraft Workers. How well do industrial wage earners in the United States eat? This question is of considerable concern to those who believe that it is now more important than ever to put into effect all our knowledge of preventive measures in order to maintain the health of the civilian workers essential to the war effort. To obtain further information on food habits of workers, an investigation was made of the diets of more than one thousand employees in an aircraft plant. Very few of the men in the study were eating a diet which would fully meet dietary standards recommended by nutrition authorities. The choice of vegetables resulted in too few of the green and yellow varieties which are needed for vitamins, citrus fruits were eaten infrequently, and too little milk was consumed. It is again shown that a diet which satisfies the appetite may fall short of providing the essential nutrients which are required to maintain good nutritional status. Young men had somewhat better diets than older men. Men under 25 drank more milk and ate more citrus fruits than those over 25 but showed a similar consumption of green and yellow vegetables and eggs. The percentage of diets, based upon 250 2-day diet records, in which the amount of a specific nutrient was less than $\frac{2}{3}$ of the recommended daily allowance were: protein, 0.8%; iron, 4.0%; niacin, 7.2%; thiamin, 14.0%; vitamin A, 14.8%; calcium, 24.8%; riboflavin, 43.2%; ascorbic acid, 46.0%. There were 71.6% in which one or more of the mineral and vitamin nutrients was less than $\frac{2}{3}$ of the daily allowance. The median caloric value was 2675 calories per day.

Determinations of Ascorbic Acid in Plasma. In this report the accuracy of ascorbic acid determinations by the micromethod is compared with the macromethod. The author discusses the procedural conditions under which the minimum error for the micromethod was obtained and shows that the sacrifice of accuracy which the method entails is slight in view of its economical requirements for blood.

NEW YORK STATE JOURNAL OF MEDICINE

Vol. 42, October 1, 1942

*Vitamin deficiencies in diabetic children. J. M. Freston and W. C. Loughlin.—p. 1833.

Vitamin Deficiencies in Diabetic Children. The incidence of positive physical signs in 93 otherwise healthy diabetic children was found to be 26.8%. Evidences of various types of B-deficiency were the most common. Signs of A- or C-deficiency were accompanied by other deficiencies. Chemical determinations for carotene, vitamins A and C showed the carotene normal. Blood levels for vitamins A and C or both were low in 87.5% of group tested. Hepatomegaly occurred with higher frequency in patients with physical signs of vitamin deficiency. Poorly controlled diabetes was common among patients with evidence of deficiencies.

PUBLIC HEALTH NURSING

Vol. 34, October 1942

*We offer nursing service to industry. L. M. Blaisdell.—p. 550.

*A dentist in a trailer. F. H. Booth.—p. 561.

*Bennington college health service. H. E. Peplan.—p. 573.

Industrial Nursing. Every aspect of health work, from nutrition to family relationships, comes to the industrial nurse for attention and only her own professional limitations stand in her way.

Rural Dentistry. An educational program which includes nutrition has been carried on by the public health rural dental service.

Health Service in College. A regular weight check of each student at Bennington College is made every 6 weeks and diet recommendations are made and supervised by the physician. Items from regular menus are selected and posted for the diets prescribed. Caloric value of each food is noted.

PUBLIC HEALTH REPORTS

Vol. 57, October 23, 1942

*The production of carious lesions in the molar teeth of hamsters (C. Auratus). F. A. Arnold, Jr.—p. 1599.

Diet and Dental Caries in Hamsters. More carious lesions were found in the teeth of hamsters fed finely ground corn meal ration than in others fed upon coarse cereal. Lesions were also found in the molar teeth when cornstarch replaced corn meal in the diet. The possibility of adapting a synthetic diet to the study of experimental caries in these animals is suggested.

SCIENCE

Vol. 96, October 16, 1942

*The food producing power of Great Britain.—p. 360.

Vol. 93, October 23, 1942

*Vitamin C in the war. H. N. Holmes.—p. 384.

Vol. 96, October 30, 1942

*Vitamin A and the thyroid. R. F. Sheets, Jr. and H. C. Struck.—p. 408.

Increase in Food Production in Great Britain. By ploughing up grassland for crops, adjusting livestock numbers and applying the knowledge of soil utilization and fertilization, farmers in Great Britain have increased the output of every acre by 5%. The farmer is able to refer his special difficulties to highly specialized agricultural scientists.

Vitamin C in the War. U. S. soldiers used 17 tons of ascorbic acid in 1940. Vitamin C is destroyed by infection and by a number of industrial poisons of military nature such as benzene, toluene, T. N. T., lead and zinc. It is also lost in appreciable quantities in heavy perspiration. The function of vitamin C may go beyond mere replacement of amount lost. It may combat heat shock. Vitamin C is also suggested to treat postoperative and allergic shocks and it is known to play an important role in the healing of fractures and of wounds in general.

Vitamin A and the Thyroid. Even in massive doses the effects of vitamin A on the metabolic rate of rats are questionable.

SCIENTIFIC MONTHLY

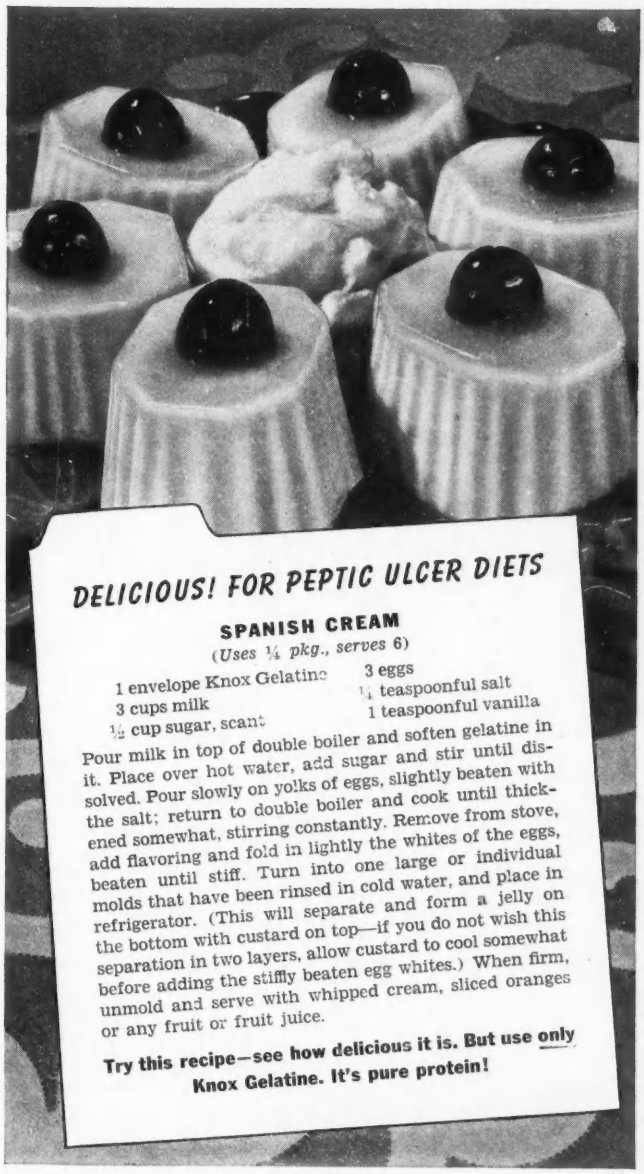
Vol. 55, October 1942

Food habits of primitive man. I. M. Graubard.—p. 342.

*The new public health. E. V. Cowdry.—p. 355.

Old Age and Public Health Problems. Doubling of the percentage population over 65 years of age is generating in this country a new public health in which the aged, who have been for centuries the forgotten ones, will share. Knowledge of nutritional requirements, among other problems of the aged, is completely lacking.

VARIETY IS THE SPICE OF DIETS



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1 teaspoonful vanilla

Pour milk in top of double boiler and soften gelatine in it. Place over hot water, add sugar and stir until dissolved. Pour slowly on yolks of eggs, slightly beaten with the salt; return to double boiler and cook until thickened somewhat, stirring constantly. Remove from stove, add flavoring and fold in lightly the whites of the eggs, beaten until stiff. Turn into one large or individual molds that have been rinsed in cold water, and place in refrigerator. (This will separate and form a jelly on the bottom with custard on top—if you do not wish this separation in two layers, allow custard to cool somewhat before adding the stiffly beaten egg whites.) When firm, unmold and serve with whipped cream, sliced oranges or any fruit or fruit juice.

Try this recipe—see how delicious it is. But use only Knox Gelatine. It's pure protein!

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FOOD INDUSTRIES

Vol. 14, October 1942

Revolution comes to the food industries. I. C. Miller.—p. 39.
England concentrates food manufacturing.—p. 42.
*Tunnel dehydraters and their use in vegetable dehydration. W. B. Van Arsdel.—p. 43.
*Swift puts meat dehydration on a production basis. E. S. Stateler.—p. 47.
*Plant mechanization helps war effort. M. E. Bridston.—p. 50.
*Improved processing helps to accomplish wartime food job. H. E. Drews.—p. 51.
*Pictures of processes.—p. 54.
*How to make better marshmallow cream. T. Cordero and C. Shackelford.—p. 58.
*Brief summaries of grade standards.—p. 60.
*How the government buys food. H. C. Albin.—p. 64.
*Bananas are available.—p. 71.
*Darkening of orange juice.—p. 73.
*Vitamin from paper mill waste.—p. 74.
*Bottlers will collect cans.—p. 75.
*War production board orders.—p. 76.
*Government to promote soya, peanut products.—p. 77.
*Demand for dehydrated meat skyrockets.—p. 77.
*OPA puts restriction on meat grading.—p. 78.
*Packers licensed to enforce prices.—p. 78.
*Grade standard amended.—p. 80.
*Bail-out ration developed.—p. 81.
*Big home pack seen.—p. 81.
*Dry soup mix sales total $1,000,000.—p. 82.
*Mexicans and Japanese harvest sugar beets.—p. 82.
*Government announces fish requirements.—p. 83.
*Two more grade standards.—p. 83.
*Plans ice cream promotion.—p. 84.
*Conducts research on vegetable dehydration.—p. 84.
*Egg production going up.—p. 85.
*Oilseed production promises big yield.—p. 85.
*Food price increase pushes up indexes.—p. 85.
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*Stainless-clad kettle.—p. 95.
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*Monostearin in cake.—p. 113.
*Lecithin emulsifier.—p. 114.
*Flavor deterioration in canned orange juice.—p. 114.

Vegetable Dehydration. In determining the kind of dehydrater to use in vegetable dehydration, specific circumstances in which it will be used should be carefully analyzed. The general principles which plant owners should consider involve: maximum retention of vitamins, flavor, and color attained by rapid drying combined with relatively low temperature and low oxygen concentration; favorable effects of rapid drying and low temperature secured by hot-air dehydraters, which have a higher operating cost; precautions against overheating the food at any stage of drying. Less shrinkage of the product makes it easier to reconstitute, but the bulk is greater. The tunnel-and-truck dehydrater handles 10 to 40 tons of vegetables per day, such as potatoes, cabbage, or carrots, dried in strips, shreds, or slices; ample ground space and only the bare essentials in restricted materials and equipment are needed. This dehydrater is "a forced circulation, hot-air dryer, arranged so that the moist material, spread on trays to expose a large drying surface, may be carried in semi-continuous flow through the equipment and emerge substantially dry."

Meat Dehydration. Under a federal contract for 80,000 lb. dehydrated beef, Swift & Company is using a rotating-drum dryer in which heated air is forced through the granular meat, resulting in less than 10% moisture content. The essential factors in dehydrating meat are: selecting the fresh meat; keeping well-defined temperature limits; holding bacterial development to the minimum; and retaining maximum nutritional qualities. Compressed dehydrated beef requires one-tenth the shipping space of that in the carcass state. Dehydration serves to retain meat's maximum nutritive value, conserves shipping space and no refrigeration of dehydrated meat is required during shipping and storage if the meat is not exposed to light and oxygen. The same is true for dehydrated pork, if the antioxidant, gum guaiac, has been added.

Salmon Canning. At the salmon canneries of Libby, McNeill and Libby, a rapid cooling system has been installed to prevent color and flavor losses and to reduce the cooling process from 24 hours to 22 minutes. It consists of a 400-ft. spray-tunnel which reduces the temperature from 240 to 120°F. and acts as part of the conveyor system with a capacity of 1000 cases of salmon per hour.

Poultry Processing. Heavy poultry demand rising from meat shortage has increased 20 to 30% over that of any previous year. Although the poultry crop can be extended quickly to take care of the greater demands, it is too late to build new plants, new equipment is available only in small quantities, and there is a labor shortage. To overcome these difficulties, better processing methods have been developed: electric killing machines, automatic scalders, conveyor-line systems, mechanical wing-pullers, automatic picking machines, and completion of defeathering by the wax or plastic method.

Olive Processing. Olives are carefully gathered in small containers and the leaves and culls are immediately removed. They are then graded by machine for size and stored in 6 to 8% brine for 6 weeks to harden the fruit and ferment out the sugars after which they are treated with mild caustic solutions and exposed to air to remove bitterness and develop dark color. For two days they are cured in a 25% salt brine. Finally, they are re-sorted, inspected, put in enamel-lined cans with the addition of hot water and a 2½% brine, sterilized, and the cans are labeled and packed. Green olives are subjected to a caustic treatment and are stored in brine in the sun for about eight months, which converts the sugar in the olive to lactic acid.

Better Marshmallow Cream. Deterioration of marshmallow cream may happen in any of the 3 following ways: loss of air and shrinkage; separation of sugar syrup; and decomposition due to fermentation. These can be diminished by use of raw materials of highest quality, by cleanliness in preparation, and by addition of the proper preservative. A basic formula of a good product consists of corn syrup (42° Be.) sucrose, invert sugar, egg albumen, water, and flavor. There are certain essential factors to observe: temperature control; high temperature during mixing, but not above 180° F; p_H of product between 4 and 5; consistency measurements; and storage never above 75°F.

Grade Standards. Government grades for canned yellow clingstone peaches and canned freestone peaches are the following, listed from best to poorest quality: U. S. Grade A or U. S. Fancy, U. S. Grade B or U. S. Choice, U. S. Grade C or U. S. Standard, U. S. Grade D, and Off Grade. Solid pack means packed without added water or syrup; U. S. Grades A, B, and C are usually packed in syrup. "Extra heavy syrup" means 24 to 35° Brix., "heavy syrup" 19 to 24° Brix., "light syrup" 14 to 19° Brix., "water slightly sweetened" less than 14° Brix., and "water pack" means packed in water. Color is rated by points for yellow clingstone peaches as follows: good, uniform color, 18 to 20 points; reasonably good and reasonably uniform, 15 to 17 points; fairly good and fairly uniform, 12 to 14 points; variable in color, 0 to 11 points. Texture is rated by points for the freestone peaches as: tender, fleshy texture, 31 to 35 points; reasonably tender, 25 to 30 points; variable in texture, 19 to 24 points; and noticeably variable, 0 to 18 points. Raisins are graded for size and quality as U. S. Grades A, B, and Off Grade.

Government Buying. The AMA moves from 700 to 1000 carloads of processed products every day for shipment to the United Nations. Most of the buying is according to specific announcements under the "offer and acceptance" plan, which is a competitive, economical, and efficient method. The announcements specify U. S. grades and standards. The AMA buys a few commodities at announced prices because of a short supply or slow marketing of perishable foods which may be wasted if prices are inadequate. To inform the public, the AMA issues a series of

BUY WAR BONDS AND STAMPS

What a whale of a difference three months make!

That *was* Jim's favorite coat — when he hung it in the closet three months ago and went to work for Uncle Sam!

Now—like millions of other soldier sons and brothers — he's huskier and healthier than he's ever been before. Hard work did it. And regular hours. *And good food.*

No other army in the world is fed so well or so scientifically as ours. And no other serves so generous a measure of dairy products — milk, cheese, butter and *ice cream.*

The diet experts who work out Army menus include ice cream several times a week — or every day in hot weather — *not just because men like it, but because it's a valuable food.*

A single serving of average commercial vanilla ice cream (one-sixth quart) gives a moderately active 154-pound man these approximate percentages of his daily requirements of the following specific nutrients: Protein, 5½%; Calcium, 17%; Iron, 2½%; Vitamin A, 7%; Vitamin B_1, 2%; Vitamin D, 3%; Vitamin G, 4%.

Even if vitamins don't mean much to you, you know that ice cream is good and good for you because it's made from milk — man's most basic and best balanced food.

Ice cream made by National Dairy is kept pure and safe by National Dairy's *Sealtest quality control.* It is brought to you by modern methods of processing and packaging worked out by the National Dairy *organization.*

National Dairy laboratories are developing many new products from milk — benefiting farmers, manufacturers and customers — *pointing the way to a finer, stronger America.*

Dedicated to the wider use and better understanding of milk as a human food . . . as a base for the development of new products and materials . . . as a source of health and enduring progress on the farm and in the towns and cities of America.

NATIONAL DAIRY
PRODUCTS CORPORATION
AND AFFILIATED COMPANIES

Originators of the Sealtest System of Laboratory Protection

purchase reports telling what was sold, when, where, and the price paid per unit.

Bananas. The Sanib Corporation, New York, is offering processed bananas packaged in 1-lb. lots containing 15 to 18 bananas. The moisture has been removed, but all mineral values have been retained. These bananas are cheaper than the fresh.

Orange Juice. Studies show that the darkening of packaged orange juice is due to the decomposition of ascorbic acid; the oxidation of ascorbic acid, therefore, should be prevented during packing and storage.

Vitamin B_2. Vitamin B_2 can be derived from d-ribose, which can be isolated from baker's yeast. This yeast can be made from sulfite liquor, waste from paper and pulp mills.

Collecting Cans. Under the approval of local salvage committees and the WPB, bottlers may collect No. 10 or larger cans from hotels, restaurants, and institutions. After cleaning and preparing the cans, they will stamp out crown caps from the bodies of the cans and will send the ends, seam, and skeletons of the cans to the city's collection point or to a detinning plant. In this way, about one-third of the can by weight will be used in bottling and the remainder for salvage.

WPB Orders. Under M-86-b, salmon will no longer be released for civilian consumption. Amendment No. 2 to Order M-119 prevents the use of rubber-sealed closure for all dried beans. Preference Order M-219 prohibits the delivery or acceptance of silica gel except by specific authorization of WPB. Under Amendment No. 1 to Supplementary Order M-135-c, civilian consumption of coffee has been reduced from 125,000,000 to 110,000,000 lb. a month. By conservation Order M-222 caffeine and theobromine must be set aside for medicinal drugs. Sheep intestines can't be sold until all orders are filled for surgical sutures. Wines, jellies, and preserves must be packed in standardized bottles, unless the containers were manufactured before September 12 or made before January 1, 1943 from a mold existing on the date of issuance of the schedule if their capacities are the same as the standard container. Interpretation 1 to Order M-81 permits canners to pack products for which a seasonal base period is specified in the tin plate quota leased on the 1941–42 pack. Under Supplementary Order M-60, 25% of cocoanut, babassue, and palm kernel oils must be withheld for government purposes. Ripe olives may be packed in tin cans. Under Order 1852 all green tea held by importers, packers, wholesalers, and jobbers, not packed in small packages, is reserved for the government.

Soya and Peanut Products. To increase high-protein foods the consumption of soya and peanut products is to be promoted by the government.

Dehydrated Meat. The purchase of dehydrated meat for Lend-Lease and military use is increasing rapidly.

Meat Grading. Beef and veal carcasses and cuts sold as "choice" quality must be graded and marked under the supervision of the official Department of Agriculture graders.

Enforcing Prices. On September 8 packers and wholesalers of meat were ordered to submit to licensing control by the OPA. Any company violating price regulations will not be permitted to sell any meat subject to price regulation.

Grade Standard Amended. On March 2, 1943, U. S. Grade A canned orange juice is to have an 18% free and suspended pulp tolerance, and U. S. Grade C juice a 20% free and suspended pulp tolerance.

Bail-Out Ration. The "bail-out" ration for Army fliers weighs about 8¼ oz. and contains a vitamized chocolate bar, a box of malted milk dextrose tablets, a carton of dextrose tablets, a tube of bouillon powder and a stick of chewing gum. The package is treated to protect contents from grease, dirt, moisture, and gas.

Big Home Pack. Around 3,887,000,000 jars of food were estimated to have been canned by housewives in 1942.

Dry Soup Mixes. Today there are about fifty brands of dry soup mixes with a total sales volume of over $1,000,000 which is likely to increase greatly. The present available production capacity can meet only one-fifth of the announced need for the next 12 months.

Sugar Beets. Over 1500 Japanese evacués from the Pacific coast and a large number of imported Mexican farm workers are harvesting sugar beets, but California still needs 150,000 local people to help.

Fish Requirements. The government will need two-thirds of the Maine sardines, 3,325,000 cases of pilchards of an estimated pack of 4 to 5 million cases, and 60% of the canner's salmon, with another 20% withheld for contingencies.

Grade Standards. Tentative federal standards for grades of frozen red raspberries and frozen strawberries have been drafted by the AMA and submitted to the industry for consideration.

Ice Cream Promotion. The International Association of Ice Cream Manufacturers has launched a 3-year public relations program to demonstrate the food value of ice cream and the importance of the industry to the farm economy of the nation.

Vegetable Dehydration. At the New York State Agricultural Experiment Station, experimental work on vegetable dehydration is being conducted with special attention to types of varieties and degree of maturity best suited to dehydration. The effect of the process on vitamin content is also under study.

Egg Production. To supply egg drying factories, the Department of Agriculture plans to have the production of eggs reach an all-time high in 1943.

Oilseed Production. Although in 1942 vegetable oils were being produced at a rate 44% over that of any previous year, the supply situation will remain tight due to reduced imports and increased exports.

Food Price Increase. Commodity price indexes continued to rise from August 15 to September 12 largely due to increases in food prices. Increases were outstanding for wheat, flour, lamb, eggs, and butter.

Greater Crop Yields. The total harvest this year is expected to be at least 13% above the previous high record.

Stainless-Clad Kettle. Groen Manufacturing Company, Chicago, has manufactured a kettle for the food industry which has a stainless steel surface, while the parts of the kettle that do not come into contact with food are of plain steel. This type of construction saves four-fifths of the stainless steel required by a kettle made of stainless steel alone.

Non-Slip Material. The Philip Carey Manufacturing Company has developed a "corrugated floor runner," composed of asphalt material, which prevents slipping on floors where water may collect.

Monostearin in Cake. It has been shown by tests that there is an improvement in the quality and volume index of the conventional plain cake when monostearin is used.

Lecithin Emulsifier. When a water-insoluble soap is added to lecithin used in chocolates and other candies heated to a relatively high temperature, better reduction of viscosity is obtained and tempering difficulties avoided.

Canned Orange Juice. Oxidative changes are believed to be the cause of off-flavors developed in canned Valencia orange juice.

LIKE CITRUS FRUIT!

IN VITAMIN C CONTENT AND CALORIC VALUE

It's doubly essential now to have V-C-B on hand to assure adequate administration of Vitamin C in any emergency!

You can give your patients the food value of fresh fruits, at less than fresh fruit cost, with V-C-B. V-C-B, hermetically sealed in oxygen-free containers, keeps indefinitely; requires little storage space.

V-C-B is a water soluble powder, which, when dissolved as directed, produces a pleasant fruity beverage approximating the caloric value and Vitamin C potency of fresh orange juice. The standard cost is only 54¢ a gallon, of which a 4-oz. liquid portion provides individual daily requirements (1000 International Units) of Vitamin C and 50 calories. Valuable also for fortifying fruit juices and beverages with Vitamin C.

V-C-B is economical: one standard No. 3 can contains approximately the same Vitamin C as 1/2 crate of oranges, and requires only 1/32 the amount of storage space. V-C-B is always fresh; there is no spoilage or waste; and it eliminates the time-wasting job of squeezing large quantities of oranges.

V-C-B and all advertising claims for it are accepted by the Council on Foods of the American Medical Association. Because of its recognized advantages many State Institutions have adopted V-C-B as a standard for administering Vitamin C. These institutions are saving hundreds of dollars yearly with V-C-B. Similar savings can be brought about in your institution through use of V-C-B. If you have not tried V-C-B, send for free sample and complete information TODAY.

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Please send, free of charge, 3½-ounce sample of V-C-B (makes 1 quart of Vitamin C Beverage).

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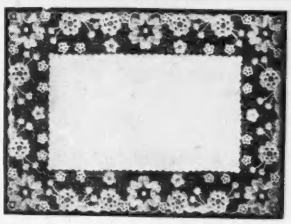

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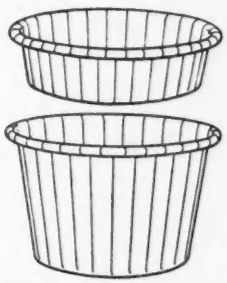
Patients enthusiastically admire the new Tray-beauty you achieve with Milapaco Lace Paper! Increases tray appetite-appeal while saving linens, laundering expense, and speeding up your diet kitchen service.



MILAPACO SOUFFLE CUPS and SHALLOW JELLY DISHES

Delicious side dishes appear more generous, more appetizing, in crisp, white, sanitary "portion-size" Souffle Cups and Shallow Jelly Dishes. Avoid tray crowding, save dishes, dishwashing and sterilizing.

Ask your Jobber for samples of Milapaco Lace Paper Tray Covers, Crepe Paper Napkins, Souffle Cups and Shallow Jelly Dishes.

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FORECAST

Vol. 58, September 1942

*Staging the demonstration. F. Maule.—p. 25.
*Menu planning—a vital tool of administrative control. Q. O. Dodge.—p 45.

Vol. 58, October 1942

Consumer week at Skidmore. E. H. MacArthur.—p. 16.
*Records for small centralized cafeterias. E. E. Potter.—p. 27.
*Ice cream . . . a wartime food. E. A. Martin.—p. 32.

Demonstration. Ability to put on an effective, smoothly-running demonstration is practically a "must" requirement to be a success as a home economist in business. To qualify as a HEWIB one should be an extrovert with a pleasing personality and trained in demonstration methods, public speaking, English composition, art and psychology.

Menu Planning. Principles of modern scientific management must be applied to the administration of food departments in order to ensure maximum utilization of available food supplies, improved quality of products served, efficient use of labor and facilities, controlled costs, improved nutritional health, and taste satisfaction. Most effective for achieving the above results are printed menu planning forms, perpetual inventory records, food prepared-consumed records and recipe cost cards.

Cafeteria Records. In Brookline, Massachusetts, the school lunch system controls financial and business activities through records kept on a departmental basis under four classifications—control of food, control of money, labor records and equipment records. Records are simple, accurate, standardized and businesslike in form. Cash receipts are checked and entered daily and weekly. A duplicate bill for all special functions is kept for future reference. Food records include menus planned, the daily order with articles and amounts ordered, quotations and firm from whom food is purchased, invoice submitted by the firm with each delivery signed by the person checking the goods received, statement from firm to check on invoices and prices quoted, standardized recipe cards, daily food record card listing food and quantity served and its cash value, and the food consumed and cash received over counters. Such a system of records provides a guide to future planning. Inventories may be perpetual or physical, the latter used in smaller organizations where clerical help is not available and the manager's time limited. Financial statements consist of monthly profit and loss statement which serves to point out good and poor points of operation by percentage distribution and provides information necessary for policy changes in the future. The balance sheet, made at the end of each fiscal period, lists assets and liabilities.

Ice Cream. The regular use of ice cream made of 80% cream and milk products is recommended as a desirable way of obtaining part of the daily milk requirement. One serving of ice cream, two-thirds of a cup, contains only 30 more calories than a glass of milk and supplies one-sixth of the daily adult calcium requirement.

HOSPITAL MANAGEMENT

Vol. 54, September 1942

*Hospital dietitians have opportunity to improve nutrition of people. R. McCammon.—p. 57.
Ripe olives have many uses in hospital dietary program.—p. 60.

Vol. 54, October 1942

*Adequate teaching program helps adjust dietary employees to their work. G. I. Thomas.—p. 62.
*Meat rationing gives opportunity to try new hospital diets.—p. 64.
Vegetable gardens, canning plant save hospital 20,000 in year.—p. 66.
Hillman Hospital, Birmingham, Alabama, becomes world nutrition center. —p. 68.

Hospital Dietitians. Dietitians with their knowledge of nutrition should fight food fads, help to undermine indifference and encourage ingenuity in order to accomplish that which is necessary to the success of the nutrition program. Some people are poorly nourished because they do not know enough, others do not have enough money, and others do not care. The National Nutrition Program is based on cooperation with state, county, city and district committees. Through the various organizations, programs can be arranged so as to avoid duplication of effort.

Teaching Dietary Personnel. It is indeed bewildering to an employee to find himself in a hospital atmosphere, and to be expected to meet the obligations of a situation without adequate preparation. When an employee knows exactly what he is expected to do, and when he acquires this information through a well-developed teaching program, a proportionate feeling of assurance and self respect and a good attitude toward the job are developed. An outline of classes is suggested which allows for twelve hours of instruction.

Meat Rationing. Prospect of meat rationing and meatless meals to help in the war program need not disturb the hospital dietitian if she is resourceful. In fact, she may welcome the chance to try new dishes.

HOTEL MANAGEMENT

Vol. 42, October 1942

*How to get and train employees during the war emergency.—p. 16.
*Visual training for hotel employees. K. A. Lane.—p. 18.
*Planning ahead to use materials that are plentiful. A. G. Mezerik.—p. 24.

Emergency Employees. A nation-wide survey of hotel employee problems reveals that the draft and higher wages in war industries have depleted the supply of elevator operators, dishwashers, maids, bell-boys, and clerical workers. Local employment agencies, newspaper advertisements, friends of old employees, schools and colleges, and chambers of commerce are possible sources of employees. The training of new employees has been intensified by individual and/or classroom instruction. The quality of service and standards maintained depend upon the thoroughness of this training.

Visual Employee Training. Pictures in this article are taken from Hotel New Yorker's sound picture, "The Perfect Host," used in conjunction with training of dining room employees.

Future Replacements. In the dining room, paper doilies and place mats are preferable to bare table tops because of their clean, white appearance, marks saved on china, and lessened noise in serving. Paper doilies are preferable to linen because of the availability and low cost. In the kitchen, glass and china oven-flame utensils are readily available and therefore offer a way to conserve metal utensils. Wooden tables now replace metal. Plastic buttons for uniforms are satisfactory substitutes. Rubber substitutions include fabric refrigerator door gaskets, composition door mats, plastic serving trays. Available floor coverings include fibre and linen rugs, and prefabricated wood floor surfaces.

HOTEL MONTHLY

Vol. 50, September 1942

*Employees' safety program at the Waldorf-Astoria.—p. 26.
*Waste can be a direct aid to the axis.—p. 36.
*What's new. Fabrit mending tape.—p. 38.
*The coffee shop.—p. 38.

Employee Safety. The Waldorf-Astoria is nationally recognized for its employee safety program. A weekly poster campaign emphasizing the positive presentation of safety measures is effective psychology. Safety cards are

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RIBOFLAVIN
NICOTINIC ACID

and other known factors of the VITAMIN B COMPLEX

MEAD'S BREWERS YEAST TABLETS • Each Mead's Brewers Yeast Tablet contains not less than .06 mg. thiamine (vitamin B_1), .02 mg. riboflavin (vitamin G), and .15 mg. nicotinic acid, together with other factors of the vitamin B complex commonly occurring in brewers' yeast.

MEAD'S BREWERS YEAST POWDER • Each gram (½ teaspoon) supplies not less than .18 mg. thiamine, .06 mg. riboflavin, and .40 mg. nicotinic acid. For infants, Mead's Brewers Yeast Powder can be shaken up in a bottle. For the older child, the product may be shaken up with milk in an ordinary malted milk shaker, with or without cocoa.

Mead's Brewers Yeast is nonviable and is vacuum-packed to prevent oxidation. Packed in brown bottles and sealed cartons for greater protection.

MEAD JOHNSON & COMPANY, EVANSVILLE, INDIANA, U. S. A.

given employees upon engagement, and a doctor talks to the workers in the department where accidents occur most frequently. Regular safety inspections are conducted by insurance carriers. Accidents are reported directly to the department head.

Save for Victory. Waste in food costs hotels and restaurants over $1,000,000 a day. A non-profit poster campaign, "We Save for Uncle Sam," was conceived by Ahrens Publishing Co., Inc.; 51 posters (8½ x 11″) for kitchens, store-rooms, pantries, food and other departments, are available at 2¢ each.

Fabrit Mending Tape. A new mending tape, "Fabrit," is applied in three steps. A piece of tape cut to the proper size is placed beneath the damaged area of the cloth. With a hot iron pressure is applied for a few seconds. This fuses the tape to the fabric permanently. The method is used for cotton or linen for tears, holes or frayed surfaces and is equally useful for reinforcing worn garments.

The Coffee Shop. Recipes, pictures, and suggestions for the preparation and serving of less-tender cuts of meat, such as flank steak, short ribs, and beef tongues, are features for the coffee shop operators since it is apparent that revision in operation will be necessary because of the difficulty in securing choice cuts of meat.

ICE CREAM TRADE JOURNAL

Vol. 38, October 1942

*What is the wartime outlook for flavoring materials. L. E. Smith.—p. 46.
War rulings affecting the ice cream industry. B. Terhune.—p. 48.
*Manufacturing problems. P. H. Tracy.—p. 56.
Substitutes for cocoanut oil in chocolate ice cream coatings. J. J. Shevring and P. H. Tracy.—p. 64.
*Digest of U. S. and state food and drug laws.—p. 68.
*Approximate weight per gallon and specific gravity of water and various dairy products temperature about 68 F.—p. 72.
*Weight of ice cream.—p. 72.

Wartime Outlook for Flavoring. Industry is looking to its laboratories to find substitute materials for vanilla, essential oils, fruit flavors and cocoa which have been cut off by the war.

Manufacturing Problems. Cutting down on sugar content and using a corn sweetening agent are recommended to solve problem of proper hardening in high-sugar ice cream mixes. Development of sandiness in ginger, coffee, chocolate and maple-walnut ice creams is due to a precipitation of lactose accentuated by high percentage of serum solids and total solids, long storage, storage under fluctuating temperatures, and flavoring with nuts which act as nuclei for formation of lactose crystals.

Food and Drug Laws. Federal laws require name and place of business, statement of quantity and ingredients on label and proper labeling of coated ice cream, ice cream sandwich and retail cartons. Exemption from listing ingredients has been granted until standards are announced. Digests of food and drug laws for the following states are listed: Arkansas, California, Connecticut, Florida, Indiana, Louisiana, Nevada, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Oklahoma, Oregon, Tennessee, Virginia, West Virginia and Wyoming.

Specific Gravities of Dairy Products. The approximate per cent fat, per cent total solids, weight per gallon and specific gravity at 68°F. are given for water, skim milk, whole milk, mixed milk and cream, cream, ice cream mix, plain condensed skim milk, plain condensed whole milk, evaporated milk, sweetened condensed skim milk, sweetened condensed whole milk, chocolate syrup and condensed buttermilk.

Weight of Ice Cream. Based on a mix weighing 9.2 lb. per gallon, ice cream in the United States ranges from 6.13 lb. per gallon with a 50% overrun to 4 lb. per gallon with a 130% overrun, as compared to Canada's figures showing a reduction in weight from 7.43 lb. per gallon with 50% overrun to 6.86 lb. per gallon with 130% overrun.

JOURNAL OF HOME ECONOMICS

Vol. 34, October 1942

*Research in foods. E. H. Nason.—p. 508.
*Institution equipment in wartime. M. S. Ehlers.—p. 525.
Cooperative research in nutrition. P. M. Nelson.—p. 528.

Vol. 34, November 1942

*Tomato catsup as a source of vitamin C. W. B. Esselen, Jr. and H. Fram.—p. 677.
*Length of the observation period as a factor in variability in calcium retentions. H. McKay, M. B. Patton, G. Cox, M.A. Ohlson, M. S. Pittman, R. M. Leverton, A. G. Marsh and G. Stearns.—p. 679.

Vol. 34, December 1942

*How schools improve the nutrition of pupils. A. F. Morgan.—p. 721.

Research in Foods. Cereal chemists have found that an ingredient in breadmaking, glutathione, a tripeptide of glutamic acid, cysteine and glycerine, which is a water-soluble substance found in large quantities in wheat germ, is believed to shorten gluten strands and reduce the elasticity of the dough resulting in a compact loaf of poor volume and texture. Fincke and Little report 26% thiamin loss from wheat germ muffins leavened with baking powder. Barackman states that more vitamin B_1 is retained by adding .25% calcium-acid phosphate. Doughs with a *p*H of 7.1 or less show only 15% thiamin loss. Use of milk instead of water in batter helps preserve vitamin B_1 in self-rising breads. At the University of Michigan experiments to compare values of various methods of beef storage on palatability of cooked meat showed that, as time in cold storage increased from 9 to 37 days, an increase in tenderness, aroma and flavor, and a loss of moisture resulted. Differences in beef stored for 4 hours at 36°F., and 60°F. at high humidity, and in either presence or absence of ultraviolet rays are slight. Mechanical tests determining tenderness of a pair of roasts, one cooked on a rack in a ventilated oven at 90°C. and the other in water at the same temperature showed that meat cooked in dry heat required only one-half to two-thirds as much force to be torn apart as that cooked by moist heat method. The former required 8 times as long to reach the same internal temperature, proving that water does not play a part in tenderizing meat. Metal skewers decrease cooking time but reduce tenderness. The tenderizing of meat is brought about by change of collagen to gelatin and is aided by holding the meat at 65°C. Glyceryl monostearate used in cake batter by Daum, Halliday, and Hinman increased the volume index from 6 to 11. The differences are in texture and grain qualities.

Institution Equipment. Heavy kitchen equipment is practically unobtainable regardless of priority number. The length of life of the present equipment varies. Commercial operators expect 10 years while non-commercial institutions plan 2 to 3 times that. Conservation requires immediate repair upon breakdown, complete cleanliness after using, thorough drying when water has been used. Lime, carbon, rust should all be removed for greater efficiency of operation and longer life. Water-repellent paint should be applied to all steamers and galvanized metal framework to increase service span.

Vitamin C Content of Tomato Catsup. Tomato catsup as purchased at retail markets contains a significant amount of vitamin C and can be considered a source of this vitamin when used as a condiment or relish. An average serving of catsup was found to contain from 2.33 to 5.10 mg. or 46.6 to 102 I.U. vitamin C.

Variability in Calcium Retentions. Calcium intake and retention data for young college women on their customary self-chosen diets were studied for variance due to differences in length of observation periods. Use of the variance and

The Newer Concepts of Meat in Nutrition

Meat . . .

in the Dietary of Diabetes Mellitus

SINCE protein needs of the diabetic patient are not lessened by "balancing" his diet and providing adequate insulin coverage, and since nitrogen equilibrium must be maintained, protein may well form the keystone of the planned diet.

Nitrogen imbalance, emaciation, and debility are frequently seen when the diabetic patient first presents himself to the physician. The deranged metabolization of ingested foods may have involved not only carbohydrates and fats but proteins as well. Since carbohydrates in the diet have not been fully utilized, and glycogen stores have been depleted, body protein has been called upon to supply energy needs.

In the planning of such a patient's diet protein may be included in amounts considerably larger than the accepted subsistence requirement of 1 gram per kilogram of ideal body weight, not only to restore and maintain nitrogen equilibrium but also to contribute to energy requirements (since 58 per cent of protein is deaminized and converted to sugar).

As dietary control is established, proteins should be continued in liberal amounts, not in the least as a safety measure. Protein foods are high in satiety value, thus help prevent "cheating."

Since its proteins possess all the essential amino acids, meat proves valuable in combatting or preventing nitrogen imbalance and aids in the restoration of the emaciated, debilitated patient. It is a good source of the B vitamins and contributes to the satisfaction of the increased requirements. It is easily digested and may be prepared in many ways, thus fostering good appetite. Meat can play an important role in the dietary of diabetes mellitus.

ACCEPTED AMERICAN MEDICAL ASSN. Council on Foods

The Seal of Acceptance denotes that the statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

American Meat Institute
CHICAGO

co-variance method showed that for the 109 individuals for whom there were 180 studies, the variance was significantly less in either 7 or 10-day periods than in the 5-day periods. Although the variance in the 10-day periods was less than in the 7-day periods, the difference was not significant. It is concluded, therefore, that of the three short observation periods of 5, 7, or 10 days in length, the 7-day period is the most practical.

School Lunch. Schools may aid the nutrition of pupils through serving all children, especially the needy and undernourished, part or all of a meal at noon, utilizing if possible the federal services which have been developed for this purpose. Frequent and accurate physical examination of the children should follow, the subsequent recommendation for treatment of those who are clearly undernourished or malnourished. School clinics, including dental clinics, under public health auspices, are the outgrowth of such work.

MODERN HOSPITAL

Vol. 59, October 1942

*How about personnel?—p. 96.
*Blending special diets. M. Stegner.—p. 97.

Vol. 59, November 1942

*Your war-time program. A. M. Macfarlane.—p. 92.
*Paper dishes solve personnel problems in large public hospital. L. R. Flint. p. 94.

Personnel. The personnel situation in the dietary department continues to be serious with little chance for relief other than from larger numbers of trained volunteers, from older men and women, and from other minor adjustments in the work program. Unquestionably, hospitals in the future will be obliged to organize the department on a different basis, ensuring adequate reward and opportunity to the right kind of help. In the meanwhile there is little the dietitian can do other than study the local situation, streamline her menus, and make working conditions agreeable for those who "stand by."

Blending Special Diets. In preparation of special diets and tube feedings, electric blenders are proving invaluable in many hospital diet kitchens. Any prescribed combination of food can be easily blended to a smooth consistency, and even cellulose fibers can be so finely divided that the resulting products are accepted by many doctors wherever puréed food has been specified. Raw or cooked meat and vegetables or a combination of both can be used, the blending time depending upon the type of food. The methods and some combinations which have proved practical are given.

Your Wartime Program. With rising food costs, priorities, rationing, increased volume of business and labor turnover, and with less buying power in every dollar, it is necessary for the dietitian to do a better job as her contribution to the war effort. All unnecessary expenditures and waste, whether in food, materials, equipment, or man hours, must be controlled. Menus made on the run, careless purchasing and receiving procedures, hit-or-miss preparation without the use of basic formulae or the best-known methods, lack of portion control, and careless serving may catapult the food cost far out of line. Lack of job analyses and work schedules accounts for high labor cost and excessive turnover. Poorly planned work areas may be responsible for much employee inefficiency. The author suggests that the dietitian conduct a survey of her own planning and operation, and gives a very detailed check list which may be used as a basis for evaluating the efficiency of a food service unit.

Paper Dishes. The Los Angeles County Hospital has eliminated the need for some 70 kitchen employees by serving meals entirely in paper dishes. In place of 7 crockery and glass pieces per person, 4 paper food containers are used—a 4-compartment paper plate, a soup bowl, a dessert dish, and a paper cup. Paper service has meant sizable economies. The greatest saving is in labor, but reduction in water-heating expense, soap savings and other factors enter the picture. Greater ease in handling due to weight reductions has made it possible to use women in jobs that formerly had to be handled by men.

VICTORY

Vol. 3, September 29, 1942

*Restrictions placed on sugar used in bulk condensed milk.—p. 4.

Milk. Milk processors, manufacturing condensed milk for packing in over 1-gal. containers, will not be allowed sugar if the milk so processed can be preserved by manufacture into other essential products such as butter, cheese and milk powder.

How the British Army is Fed

Dehydrated products, some of which are still in the experimental stage . . . will be of great value for places like Gibraltar but are of little value for desert warfare. Canned vegetables and meat are much better. One myth was exploded. There is no method of feeding men on tablets. Moisture and bulk are an essential part of human diet. But everything possible has been done to compress a satisfactory day's food into the smallest space possible. So far the health of our army has been better than it has ever been in peacetime. There has been no case of dietetic deficiency.—*Foreign Letters, J.A.M.A., 120: 549, 1942.*

Mother's milk as a source of thiamine

THIAMINE in mother's milk is the only natural source of vitamin B_1 available to the young breast-fed infant. Pasteurized cow's milk may have on the average about 26 micrograms of thiamine per 100 ml. (cubic centimeters). In contrast, breast milk may contain from 3 to 18 micrograms per 100 ml., with a fair average about 9 micrograms.[1]

In the low thiamine content of human milk, diet is an important factor, but feeding the mother increased quantities of thiamine-rich foods for short periods of time, such as one week, will not suffice to increase the richness of her milk in this respect.[1] Even with a continued adequate intake by the mother, the maximum content of the milk does not rise above 20 micrograms per 100 ml.[2]

These facts should not be interpreted as arguing against the use of breast milk. On the contrary, they do emphasize the need for a better thiamine consumption on the part of the nursing mother so that her infant will be well nourished.

When advising the nursing mother in matters of diet, consider the merits of PILLSBURY'S ENRICHED FARINA whenever a bland, easily digested cereal is indicated. In addition to its normal content of nutrients, Enriched Farina contains per pound of dry cereal:—

1.66 milligrams of thiamine (vitamin B_1)
6.0 milligrams of niacin (nicotinic acid)
6.0 milligrams of iron

PILLSBURY'S ENRICHED FARINA is low in crude fiber but high in food-energy value (calories).

[1] "Thiamine Content of Milk in Relation to Vitamin B_1 Requirements of Infants," Elizabeth M. Knott. American Journal of Public Health 32: 1013, 1942.

[2] "The Thiamine Content of Human Milk," E. C. Slater and E. J. Rial. Medical Journal of Australia 29: 3, 1942.

Pillsbury's *Enriched* Farina

News Notes

H.R. 7633 Signed by the President of the United States. On December 22, according to a telegram received from Evelyn Anderson, Doctors Hospital, Washington, D. C., H.R. 7633 (*see* page 29 of this JOURNAL and page 830 for December) was signed by the President.

Work Program for 1942–43. At a meeting in Detroit on October 22, with Frances MacKinnon, President of the American Dietetic Association presiding, a tentative program for the Association for the year was suggested by section chairmen and others as follows:

Maniza Moore, Vanderbilt University Hospital, Nashville, Tennessee, chairman of the Administration Section, stated that three new projects of immediate practical value are being undertaken, namely: (1) The further development of the check sheet for housekeeping in the food service unit (Edith Hoadley, Salem Hospital, Salem, Massachusetts, chairman). This check sheet has been prepared by the American Dietetic Association, but needs revision. (2) The care of equipment (J. Marie Melgaard, University Hospitals, Oklahoma City, chairman). Miss Moore expressed the hope that members of the Association will consider it a patriotic duty to contribute their methods of conservation to the study, since care of equipment for the duration will be a major project in every dietary department. (3) Recipes for the use of nonrationed meats and other good sources of protein (Ella M. Eck, University of Chicago Clinics, Chicago, chairman). Since *Quantity Food Service Recipes* is to be reprinted soon, it is requested that members who have noted inaccuracies in the recipes report these and submit corrected copies to Gladys E. Hall at the Executive Office of the Association in Chicago.

Dorothy B. Hacker, Nutrition Consultant, Visiting Nurse Association, 51 West Warren Avenue, Detroit, chairman of the Community Education Section, reports the following projects: (1) The use of volunteers in food and nutrition service (Lucy Simpson Mulqueen, Director, Nutrition Service, City Hall, Cedar Rapids, Iowa, chairman). This year there will be even greater demands upon every dietitian and nutritionist. It is necessary to learn specifically what responsibilities can be successfully delegated to volunteers. (2) In-service education of the public health nurse in foods and nutrition (Eleanor Bigelow, Visiting Nurse Association, Philadelphia, chairman). (3) Aids and materials for teaching nutrition classes. Miss Hacker stated that it is desirable to organize this project on a state basis. The object is to make a current list of aids and materials for those who are teaching both professional and lay groups. In order to be useful and up to date such lists should be issued every three or four months. If the Community Education Section of each state association would assume the responsibility for compiling such lists and sending the results to the national chairman, Miss Hacker, a master list could be compiled which would be available not only to members of the Association but to other interested groups and individuals as well. (4) Nutrition education in industrial plants.

Dorothea F. Turner, University of Chicago Clinics, Chicago, chairman of the Diet Therapy Section, stated that this Section plans the following (1) An informative study regarding new developments in dehydrated foods (Mrs. Kathryn MacLennon Barry, University of Illinois Research and Educational Institutions, Chicago, chairman). Data for each food or food product will be filed with reference to its availability, method of dehydration and packaging, effect of processing on nutritive values, appearance and flavor of finished product, advantages and disadvantages of finished product, and reconstitution. (2) An experimental study to ascertain biological value of proteins of certain high-protein dehydrated products after processing (Dr. Gladys Everson, Nutrition Department, Wayne University, Detroit, chairman). (3) A cooperative study to be developed with the Food Habits Committee of the National Research Council concerning the relationship of food therapy to mental hygiene (Elmira Blecha, Massachusetts General Hospital, Boston, chairman). Dr. Margaret Mead, Executive Chairman of the Food Habits Committee, will represent the government committee in this study. (4) A continuation of the compilation of new figures for nutritive values of foods as results are reported in current publications (Dr. Ruth Cowan Clouse, Illinois Institute of Technology, Chicago, chairman). As these data are assembled, they will appear periodically in this JOURNAL. (5) A study of selective menus, to determine whether these are successful from a nutritive viewpoint. All members who are in a position to study the food intake of patients using the selective menu are asked to assist in this study.

Dr. Helen A. Hunscher, Western Reserve University, Cleveland, chairman of the Professional Education Section, presented the following projects for the coming year, the first four of which are continuations of projects now in process: (1) Needs and responsibilities of the student dietitian (Dr. Grace Augustine, Texas College for Women, Denton, chairman). (2) Contents of college courses (Grace Godfrey, Drexel Institute, Philadelphia, chairman). (3) Study of the educational standards of the dietetic curriculum for students in schools of nursing: (a) qualifications of dietitian teaching the student nurse and her interpretation of the National League of Nursing Education's recommended curriculum (Marie Hines, University Hospitals, Cleveland, chairman); and (b) methods of teaching and rating student nurses' achievement in dietetic curriculum for the individual school of nursing and the state boards of examiners for registration (Lucille Frech, University of Michigan Hospital, Ann Arbor, Michigan, chairman). (4) Evaluation scales for student dietitians (Marie V. Krause, New York Hospital, chairman). (5) Study of training needed by the public health nutritionist—joint project with the American Home Economics Association (Mrs. Alice H. Smith, Cleveland Health Council, 1001 Huron Road, Cleve-

Do you mind if we serve the boys first?
Every American family will be glad to know that our soldiers, sailors, and marines are getting pineapple all over the world.
To supply our armed forces will require one-third of the 1942 pack of Dole Hawaiian Pineapple and Dole Hawaiian Pineapple Juice.
A greater demand at home than ever before for Dole Pineapple Products makes the distribution of the balance a real problem.
This is due to our bigger appetites sharpened by war work, as well as to a growing appreciation and preference for those canned fruits and juices which are good sources of vitamins B_1 and C.
Your grocer will do his best to supply you with Dole Pineapple Products. If it is necessary for him to limit your purchases, please understand that such restrictions are made to conserve the available quantity so everybody will have a fair share in the days to come.
DOLE
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land, representing the American Dietetic Association). (6) Cooperation with state associations to aid in the recruiting of students for the dietetic field.

Gladys E. Hall, Educational Director, will continue to review the essential requirements of hospitals and other institutions wishing to qualify as training centers for dietitians. Hospitals and other institutions planning to meet these requirements should notify the Chicago office. There are seven such applications on file, and at least seven others propose to establish courses. Hospitals in Kentucky, Kansas, and Wisconsin are represented on this list, states which do not now offer training in approved courses.

Nelda Ross has accepted chairmanship of the Council of War Activities of the Association, formerly headed by Lenna F. Cooper. Adeline Wood will continue her special responsibilities as a member of the Council. Margaret Gillam and Melva Bakkie will direct plans for the training of nutrition aides for use in hospitals; Millie Kalsem, the recruiting of hospital dietitians; Anna Tracy, the recruiting of dietitians for college and industrial feeding; and Evelyn Smith will review material on mass feeding.

Special Training for Army Dietitians. It was announced by the War Department in November that more than two hundred dietitians will be trained each year for service in Army hospitals at home and abroad, in the accelerated course mentioned in the December and earlier issues of this JOURNAL.

High School Occupational Information Program Under Development. Mr. Randall B. Hamrick, Executive Director of the Collegiate Cooperative Advisory Council, Department of Education, Yale University Graduate School, writes under date of October 31 that less than 7 per cent of the 28,000 American high schools have occupational information programs of any kind. The above-mentioned Council is therefore attempting to provide resource materials for the development of such programs and is asking the assistance of persons alert to this problem in obtaining suitable vocational information.

New York Nutrition Committee Conducts Educational Campaign on Meat Rationing. On November 27 the Nutrition Committee of Greater New York issued a call for complete mobilization of all groups professionally trained in nutrition and home economics to assist in a training program for block leaders during the week of November 30. It was planned to hold over one thousand meetings for this purpose with instruction given at three or four evening sessions. The program was under the direction of Grace MacLeod, chairman, Nutrition Committee of Greater New York.

Conference of Food Service Directors. The eighth annual meeting was held at the John Marshall Hotel, Richmond, November 5–7. Margaret Fitzhugh and Helen R. Robertson, members of the Virginia Dietetic Association, served as local chairmen. The program included the following: "How Food Service Directors Meet the War Emergency," a discussion led by Phyllis K. Sprague, professor of institution management, Pennsylvania State College; "Proper Diet and the Industrial Worker," Dr. W. L. Weaver, medical supervisor, DuPont Chemical Company, Richmond; "School Lunchrooms," Winning S. Pendergast, supervisor of school lunchrooms, Detroit; "Training Restaurant Employees to Meet the War Emergency," Helen G. Hoagland, director of food research, Hotels Statler Corporation; "Meeting the Present Meat Situation," Max O. Cullen, National Live Stock and Meat Board; "Cooking Methods and Meat Extenders," Reba Stagg; and "The Value of Meat in the Light of Recent Research," Anna Boller, also of the National Live Stock and Meat Board. Other interesting features of the meeting were the meat demonstrations, and the round-table breakfasts at which directors, dietitians and lunchroom managers exchanged ideas and experiences and discussed informally their numerous problems.

Married Nurses to Continue on Active Duty. As stated in the *Journal* of the American Medical Association for October 31, the War Department has announced that, effective October 1, members of the Army Nurse Corps who marry will, at the discretion of the Surgeon General, be continued in active service for the duration of the war and for six months thereafter. Heretofore nurses were discharged from the service on marriage. Nurses now on duty will not be permitted to resign unless replacements are available, and nurses appointed and ordered to active duty after December 27, 1941 will not be permitted to resign during the present emergency. Those of the latter group will be released only for physical disability or incompetence.

Home-Economics Education Conference. A professional conference on home economics education was held at the School of Education Auditorium, New York University, November 13–14. Included in the program were the following: "Optimum Nutrition for War and Peace," Lorna Barber, regional director of nutrition, Office of Defense Health and Welfare Services; "Management of Civilian Supply," Roland S. Vaile, Chief of Consumer Programs Branch, Office of Civilian Supply, War Production Board; and "Food Preparation and Meal Service," Mrs. Gladys Peckham, Ruth Lusby, and Lila Canavan.

Judgments Against Vitamin Preparations, etc. Conspicuous in the September issue of the "Notices of Judgment Under the Federal Food, Drug, and Cosmetic Act" covering "Drugs and Devices" are several judgments against manufacturers of vitamin preparations. One such represented each tablet to contain 3150 U.S.P. units of vitamin A, but biological examination showed that the tablets contained not more than 2500 units. Another firm represented its product as containing 100 I.U. vitamin B_1 per tablet, but biological assay showed it to contain not more than 60 I.U. Others showed even more flagrant discrepancies. Three cod liver oil concentrates were found to contain less vitamin D and A than claimed on the labels. A certain brand of honey was falsely labeled to indicate that it possessed minerals and other nutritional elements materially in excess of those contained in ordinary honey and statements in the labeling represented that it possessed efficacy as a dietary supplement in the treatment of sinus, coughs, asthma, hay fever, constipation, stomach ulcers, etc. etc. Another brand claimed to be "helpful in diabetes." A "diabetic tea" made from St. Johnswort was seized because it bore the statement that it was "carefully prepared for the use of those who suffer from diabetes." Another product called "Enrich" claimed falsely that it would furnish 99 mg. iron daily, "80 per cent of the entire day's needs" and that "if you suffer from low vitality, neuritis, nervousness, or other nerve disorders, pale cheeks, lips, eyelids, or gums, iron-poor blood, cold hands or feet, etc. etc., you may need more of the vital elements iron and vitamin B_1." A carload of gelatin packages accompanied by a circular concerning the value of the product in "building endurance and resistance to fatigue" and other virtues was seized and the product ordered released under bond on condition that the circulars and booklets be removed from the packages. "Garlic tablets" were alleged to be misbranded in that they bore false and misleading statements representing that they would "build better health, stimulate digestion, and reduce high blood pressure; that garlic causes the relaxation and expansion of the tiny blood vessels and small arteries, which have the direct and immediate effect of lowering blood pressure; that it would relieve that peculiar dizziness and headache which

HOW WILL YOU MEET THE CHALLENGE OF WARTIME NUTRITION?

Even before the war, the nation's food habits presented a problem to every nutritionist. 3 out of 4 Americans, according to Government surveys, failed to get enough vitamins and minerals from their diet.

Today, food rationing and shortages will make it increasingly difficult for the average housewife to plan well-balanced meals. The many women who are adding war work to housework will have less time for the careful buying and preparation of food.

How, in spite of these hurdles, can people be sure their diets measure up to the high vitamin-mineral levels necessary for full strength and physical fitness?

One answer, of course, lies in education. Women must be taught new and nutritious substitutes for unavailable foods. They must be prepared in advance for newer, stricter rationing . . . helped in spite of it, to give their families a variety of wholesome foods.

And then there's another answer in today's emergency—to choose the best available diet and supplement it with Vimms. Vimms supply all 6 vitamins recognized as essential, in the full daily minimum amounts established by the Government, and accepted as a standard by official medical councils.* Vimms also provide important quantities of Calcium, Phosphorus and Iron. The tablets are pleasant tasting; they cost little (50¢ for 24 tablets; $1.75 for 96 tablets; $5.00 for 288 tablets). And no product at any price can match all the advantages of Vimms.

*Jour. of the A. M. A., July 18, 1942, pp. 948-9

FREE

IMPORTANT BULLETIN ON EXTENT OF MALNUTRITION

A summary of an exhaustive study of the nutritional status of representative people in many walks of life has just been published in bulletin form by one of the leading research laboratories in the country.

We have been fortunate in securing a number of copies of this bulletin, entitled "The Extent of Under-Nutrition." If you want a copy for your nutrition library, write to Lever Brothers Co., Dept. AD-4, Pharmaceutical Div., Cambridge, Mass.

VIMMS MEET OR EXCEED MEDICAL RECOMMENDATIONS*

Medical recommendations are based on these Gov't standards	VITAMIN	See how 3 Vimms meet or exceed these standards
4,000 USP Units	A	5,000 USP Units
1.0 Milligram	B_1	1.0 Milligram
2 Milligrams	B_2	2 Milligrams
30 Milligrams	C	30 Milligrams
400 USP Units	D	500 USP Units
10 Milligrams	P-P (Niacin Amide)	10 Milligrams

In addition, Vimms supply these vital minerals:

CALCIUM . . . . . **375 Milligrams**
PHOSPHORUS . . . . **250 Milligrams**
IRON . . . . . **10 Milligrams**

*Jour. of the A. M. A., July 18, 1942, pp. 948-9

usually accompanies high blood pressure, etc. etc." "Alimentone Powder," represented as being effective in treating overweight, and "Oomph Candy," offered as an aid to reduction of weight, were seized as misbranded. Two brands of mineral water, each of which claimed to be efficacious in affording relief for almost any physical ailment and one of which, in addition, recommended its use for persons who were "cross, tired, misbehaving, naughty," and said that it was valuable for the maintenance of health, "for the teeth, for the blood and for life" were condemned. Other products seized included a formula for diabetes consisting of sulfuric acid, alcohol, and water flavored with aromatics; a product called "Glucocinine" supposedly consisting of "plant insulin substances free from carbohydrates"; and a "pick-me-up bath" and "hangover bath" consisting essentially of ammonia, alcohol, and water with green coloring matter and alleged to be misbranded in violation of the Federal Caustic Poison Act as well as the Federal Food, Drug, and Cosmetic Act. It is interesting to note that of the 115 notices of judgment recorded, only one case was contested by the makers of the products in question.

Fruit Spray Tolerances and Use of Monochloracetic Acid. Pressure of wartime work for technical staffs of the U. S. Public Health Service and the Food and Drug Administration makes it "very doubtful" that any action toward setting formal tolerances governing lead arsenate spray residues on apples and pears and use of monochloracetic acid in various foods will be taken in the near future, according to the statement of a spokesman for Paul V. McNutt, quoted in *Food Field Reporter*, October 12. At present FDA is not seizing shipments of apples and pears unless they bear spray residues in excess of 0.05 grains lead and 0.025 grains arsenic per pound fruit. These tolerances were set by Administrator McNutt August 12, 1940, following a report by the Public Health Service which stated that those quantities of spray residues would not endanger consumer health. Since then, these tolerances have been challenged by scientists who have pointed out errors in the methods and conclusions on which the figures were based and the Food and Drug Administration has asked for public hearings on the subject. Likewise, FDA's position that monochloracetic acid may not be used as a substance in foods has been questioned and hearings have been requested.

Womanpower Mobilization. Nelda Ross, chairman of the War Activities Committee of the American Dietetic Association, and Lenna Cooper represented the Association at a meeting of the Group Action Council, New York, November 14, as a member organization. Among the speakers and leaders of discussions at the meeting were: Eveline Burns, National Resources Planning Board; Dr. Helen Baker, Princeton University; Lilian Sharpley, National Board, Y.W.C.A.; Eleanor H. Park, U. S. Employment Service, New York State; and Louise Bache, National Federation of Business and Professional Womens Clubs, Inc.

Previous to this meeting, Paul V. McNutt, chairman of the War Manpower Commission, issued a statement of policy calling for intensified recruitment and training of women workers on a voluntary basis in all phases of war production and essential civilian activities. In making this statement, Mr. McNutt said that he was acting on the recommendation of the Women's Advisory Committee of the War Manpower Commission. Salient points in the statement are that management and labor organizations should remove all barriers against the employment of women in any occupations for which they are or can be fitted, and that women should be admitted on a basis of equality with men to all forms of training. Due regard is to be given, however, to the individual's qualifications for work, the physical requirements of occupations, and to working conditions. Included are on-the-job training in plants, and "up-grading," with free access to foremen's supervisory and technical jobs. Employers are asked to analyze all jobs in their plants at once to determine which can be filled by women and to prepare for employing the largest possible number.

The Regional Manpower Directors and the ten newly appointed area directors are being instructed to give immediate attention to the program in areas of labor shortage. Special local womanpower campaigns, such as those recently undertaken in Detroit and Baltimore under Manpower Commission auspices, are being studied carefully to determine the best methods for recruiting new women workers and employing them successfully. The policy statement recommends that all-out recruiting of women should be undertaken in any locality only upon advice from the War Manpower Commission that a labor shortage exists or is imminent in the locality, and that additional women workers are required. Under these circumstances, the recommendation is that "all women able to accept employment register for employment or training with the nearest local office of the United States Employment Service." Every effort is to be made, the policy states, to recruit and refer women, including older women, for jobs and training on the basis of their qualifications for an occupation, without discrimination because of race, national origin, or creed. Women are warned, however, not to leave their home communities to look for work or training elsewhere without first registering at their nearest U. S. Employment Office and finding out whether jobs or training are available in other localities.

With regard to wage rates for women, the policy recommends the principle of equal pay for equal work, urging that wage rates "be determined on the basis of the work performed, irrespective of sex." It also recommends appropriate safeguards regarding hours of work for women, adequate meal and rest periods and facilities for medical care, health and safety. One day of rest in seven, an 8-hour shift and a maximum 48-hour week, except in case of emergency, are considered necessary to maximum production efficiency. Employment of women with young children is not recommended until full use has been made of all other sources of local labor supply. Where this is necessary, either because of intense labor shortage or because the individual finds it necessary to work, the policy recommends that adequate community child-care programs be set up and that the work shift be adjusted so as to cause the least possible disruption of family life.

A "broadside" issued by the National League of Women Voters, entitled "Manpower—A Bird's Eye View," summarizes certain pros and cons of compulsory manpower mobilization and suggests, among other things, that if government control is to be effective there should be one agency designated which would have over-all supervision of the manpower problem—on the front, in the factory and on the farm. Copies of this broadside may be purchased at 75 cents per hundred from Mrs. Sherleigh G. Fowler, publications secretary. Other releases issued by the League on subjects of current interest may also be obtained from Mrs. Fowler.

National Council of Women of the United States. The annual meeting of this organization in New York, November 18–20, was attended by Nelda Ross, chairman of the War Activities Committee, representing the American Dietetic Association as a "guest association." The purpose of the meeting was to exchange views on the "services most needed to be performed by organized women at this time." At the opening luncheon November 18, a "victory menu" was evolved by Mrs. Elizabeth Bussing, chairman of the Consumers' Committee of the Brooklyn OCD and sponsored by the New York Nutrition Committee. Representatives of various member organizations presented comprehensive reports of their organizations' participation in the war

How this FREE Vitamin Food Chart SIMPLIFIES DIET-PLANNING

EASY TO UNDERSTAND. Cream of Wheat's Vitamin Food Chart lists every vitamin of known importance and explains why it is essential to the body. You get information almost at a glance.

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effort, and the following plans of action, among others, were decided upon: a proposed petition regarding the establishment of freedom for women in all of the United Nations before the conclusion of the war, to be presented to representatives of these nations meeting in Washington; a resolution regarding the need of a protective program in connection with delinquency among young girls due to war conditions; a recommendation to women's organizations regarding a protest against the filibuster on the Anti-Poll Tax Bill; a pattern for local and regional conferences on morale; and a petition asking OPA to require goods to bear informative labeling to allow the consumer to "tell whether a product is a good value for the price asked; how the product compares in quality with others of the same type; whether the quality has been lowered with respect to the price ceiling." The National Council of Women in cooperation with the National Safety Council has prepared a leaflet entitled "She's Leading a Double Life!" which describes how the housewife can combine home duties with war work and how she can conserve materials and maintain the health of her family as a contribution to the war effort.

Bureau of Home Economics Publications. A recent bulletin issued by the U. S. Bureau of Home Economics, addressed to "Mr. and Mrs. Homemaker," gives full and detailed directions for taking care of both mechanical and ice refrigerators. Though most of these suggestions are familiar to dietitians, there is some information included which has not appeared before in such compact form, notably care of the mechanical parts of a refrigerator, the outside of the box, etc. Quantities of the bulletin for distribution to housewives or others may be purchased from the Superintendent of Documents at $1 per 100 copies, as may also three other recent bulletins: "How to Make Your Washing Machine Last Longer"; "Take Care of Household Rubber," and "Make-Overs from Men's Suits," the last of which tells women who now must, figuratively speaking, wear their husbands' civilian trousers, how they may do this literally by transforming male apparel, discarded for the trappings of war, into female garb.

Buying Canned Fruits and Vegetables. An instruction manual, for distribution to teachers of home economics in schools and colleges and to others who are conducting adult classes in nutrition or other consumer subjects, has been prepared by the National Canners Association and is described as "A study of the various forms and characteristics of canned fruits and vegetables and the label statements which describe and specify them." It contains explanations of the requirements of the Federal Food, Drug, and Cosmetic Act in regard to standards of quality; "standards of identity," *i.e.* what the contents of the can must be when labeled with the common name of the product; standards of fill of contaneri, etc; and the principles which the canning industry and consumer leaders agree should be followed voluntarily in giving information on labels. Terms of description and specification which have been selected by the Labeling Committee of the National Canners Association and recommended for uniform use on canned food labels are given for individual vegetables and fruits, as well as the "mandatory" designations required by the federal regulations. Sample labels for various products are included in the manual.

Victory Center, at 745 Fifth Ave., New York, was established as a clearing house for ideas on how to help win the war in the shortest possible time, according to a descriptive booklet published by the Center. It was founded by a small group of citizens representing various professions and differing political and social views. War-winning projects developed in one community will be promoted elsewhere through the agency of Victory Center. Every idea submitted is studied and acknowledged and, if it has potentialities, is passed on to specialists in various fields, through government or non-government agencies. Contact has been established with over one hundred groups representing every section of the country and these groups have been asked to poll their memberships for ideas. Among the Victory Center consultants and endorsers are: Professor John Dewey, Columbia University; Mrs. Ambrose N. Diehl, National Council of Women; Dr. Albert Einstein, Princeton University; Mrs. Sidonie N. Gruenberg, Child Study Association of America; Dr. Margaret Mead, American Museum of Natural History; and Wesley C. Mitchell, National Bureau of Economic Research.

New Reel Added to "Hidden Hunger." This picture, an official film of the National Nutrition Program, which has received the approval of both movie critics and nutritionists alike, is now available for non-theatrical showings in 16 mm. size with sound track. A reel of straight nutrition material has been added to the film for educational purposes, especially for nutrition classes, which tells exactly what foods make a balanced diet, how to choose them, how to store and prepare them. Specific information on meal planning is given and meals comparing the food requirements of a child, a factory worker and a white collar worker are shown. A Teachers' Nutrition Manual and Quiz has also been prepared, which, together with the 3-reel picture (running time, 30 minutes) can be used as the basis for a brief nutrition course or as supplementary material. Prints of the film and manual have been deposited in centrally located film libraries throughout the country, and bookings are being handled by Swift & Company, Union Stock Yards, Chicago.

Materials for Nutrition Program. As announced by Dr. Helen S. Mitchell, Office of Defense Health and Welfare Services, the following additional materials are available for use by nutrition committees and others: "Modest Miracle," a motion picture which features the discovery of the vitamin B complex and some of its uses, and which may be shown in local theatres through arrangement with Standard Brands, Inc., 595 Madison Ave., New York; The "Vita-Min-Go" game, consisting of a colored chart giving values of various foods, and score cards on which values are scored by means of counters, obtainable from Vita-Min-Go, Inc., 175 Varick St., New York, at the rate of 15 for $1; 30 for $2; 60 for $4; 100 to 250 at 5 cents each, and over 250 at the rate of $43 per thousand, shipped C.O.D.; "Feeding the Child for Health," a booklet published and distributed free by the Educational Division, California Fruit Growers Exchange, Sunkist Building, Los Angeles; and "What Does Enriched Mean?" a one-page flyer written by Dr. R. R. Williams and distributed by the American Institute of Baking, 10 Rockefeller Plaza, New York.

The Retail Merchants' Association of Pittsburgh has sponsored a booklet prepared by the Fashion Group of Pittsburgh, entitled "Conservation Begins with You," which tells how to buy, clean, mend, and store clothes.

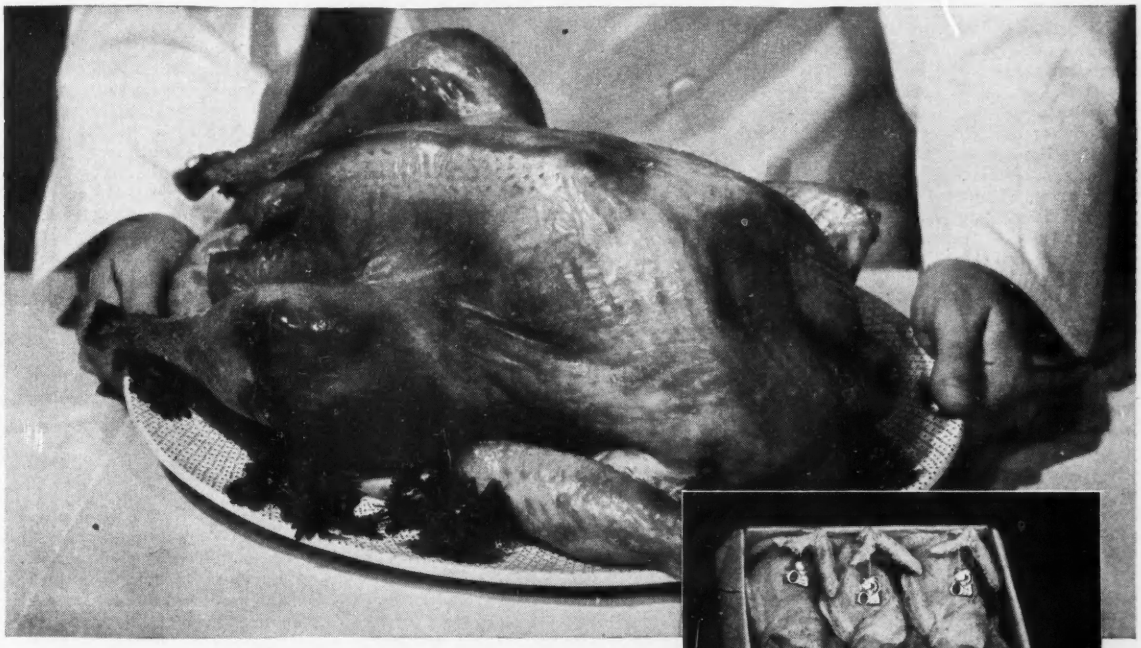
"How to Win on the Home Front" is the title of a pamphlet released by the Public Affairs Committee, Inc., which is a compilation of material from Bureau of Home Economics publications, the *Consumers' Guide*, and official releases of government bureaus.

Nutrition News Letter, No. 6. The October *News Letter* from Dr. Helen S. Mitchell contained suggestions for "making nutrition function" at state and county nutrition committee meetings, at dinner or luncheon clubs, at church suppers, and at potluck meals or picnics, by serving attractive, correctly prepared foods in the proper proportions to make a well-balanced meal, or by introducing new dishes. Recent state programs reported in the *News Letter* include

Just like making all your servings from one bird . . . so

uniform in quality

are these meaty, tender turkeys!



Packed in boxes of 6. For easier quantity cooking, all birds in each box are uniform in weight.

Whether you serve ten or a hundred of these Swift's Premium Turkeys, they'll *all* be plump, tender, and heavy-breasted, with plenty of juicy dark meat—*the pick of the flocks.*

You'll find, too, that *all* Swift's Premium Turkeys give you a maximum number of servings per bird. *Meat, not size, gives them weight.*

These are turkeys specially selected by poultry experts . . . critically examined, graded to Swift's exacting specifications. The pick of the flocks are tagged Swift's Premium.

Nationally famed and respected as a mark of known, unvarying quality, the Swift name is your *guarantee* of fine turkeys.

This year, be sure that *every* turkey you serve is *identical* in quality—tender, juicy, delicious. Specify *Swift's Premium Turkeys!* Order early from your Swift salesman, or write Swift & Company, Chicago.

The pick of the flocks are tagged ➡

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a "Youth in War" program in Alabama, including the "BAMA-RENS" program of physical fitness for women students at the University of Alabama. (REN stands for rest, exercise, and nutrition.) In Mississippi the State Nutrition Committee is making a drive to have a school lunch in every school through the cooperation of teachers and the P.T.A. A "nutrition kit" is being distributed to every school in Tennessee by the State Health Department and State Department of Education at the suggestion of the State Nutrition Committee, and other kits to adult groups. The kits contain a teaching guide suitable for the group in question, plus reference materials for the school library with a list of additional materials which the school may acquire. The University of Tennessee is also offering an extension course in nutrition for elementary teachers.

New materials recently published by the OCD and available from state and local defense councils are: "Organization Outline for Local Defense Councils," "Handbook for the U. S. Citizens Service Corps," and "The Block Plan of Organization for Civilian War Services." Copies of "Suggestions for Using Volunteers in School Lunch Programs in the War Emergency," prepared by the Cooperating Committee on School Lunches, and reprinted from *Education for Victory*, October 1942, are available from the U. S. Office of Education, Washington. A sample copy of "The Road to Good Nutrition" was included in the letter. This is an illustrated booklet prepared by Dr. Lydia J. Roberts in collaboration with members of the Children's Bureau staff. Much of the material is based on her textbook *Nutrition Work With Children*, and deals with the malnourished child in contrast to the well-nourished child, good nutrition throughout the child's life, including a description of the "continuing hazards to good nutrition" and means of salvaging the child who has had a bad nutritional start. A check list to determine whether a child is healthy and well-nourished concludes the booklet. Reprints of a section from the 1939 *Yearbook of Agriculture* on "Food Fads, Facts, and Fancies," a copy of which was enclosed, are obtainable from regional nutrition representatives.

Exhibit on Food Fads. Included among the exhibits relative to the work of the various departments of the American Medical Association, prepared for medical societies and other scientific organizations, is one from the Bureau of Investigation concerning food fads. This consists of a mechanical attention arrester, two sets of transparencies showing persons whose diets require special attention and persons whose diets should have been more carefully regulated; six posters, each 22 by 38 inches, dealing with some of the popular but foolish fads; and an exposition file with additional information. The exhibit would require a booth with back wall 10 feet wide and side walls 6 feet deep, three small tables for transparencies and file, three electric outlets for transparency cases and a small universal motor totaling about 600 watts. Shipping weight is 389 lb. Further information may be obtained from Director, Scientific Exhibit, American Medical Association, 535 North Dearborn St., Chicago.

Packaging and Delivering Frozen Foods. In a thesis written by a student at Georgetown University, Armand J. Gaglia, a comparison of the amount of material needed for packaging frozen food as compared to that used for canned or fresh foods is set down as follows: It takes 48,047 lb. packaging material for 1,000,000 lb. frozen peas, 398,933 lb. when the same amount is canned in No. 2 cans, and 273,492 lb. when packed in No. 10 cans. If the same quantity is sold fresh in 32-qt. hampers, the weight of the packaging reaches a total of 326,000 lb. Also, it requires but 31 cars to transport 1,000,000 lb. frozen vegetables, compared with 65 cars when the equivalent is in cans, or 167 cars when it is fresh.

New Method of Dehydrating Meat. According to the *Food Field Reporter*, October 12, a new method of dehydrating lean pork has been developed at the Griffith Laboratories in Chicago. It is claimed that with the new process all the natural meat juices, vitamins and minerals are retained, and that the color and taste are satisfactory. The theory is that the natural meat juices, fats and other components should be preserved in the proteins in a "firm, physical union," eliminating the separation of the fats and other nutrients in the cooking process. This is made possible by mincing and stuffing the meat into canvas bags before cooking. Also, the new process proceeds on the theory that cured meats containing a minor amount of salt and a minor amount of cure are more palatable and will keep longer than the unsalted dehydrated meat. The meat after dehydration contains 12 to 15 per cent moisture and 38 to 40 per cent fat and, according to the inventors, will keep in normal temperatures for considerable periods of time without deterioration if packed in sealed tin containers under vacuum, or other suitable containers. One advantage of this process is that small meat packers can process the meat up to the point of dehydration and can then ship it, in the cloth bags, to a central dehydrating plant. Although patented, the process is being made available to the industry without cost for the duration. Specifications for preparing either beef or pork loaves for dehydration will be furnished by Griffith Laboratories upon request.

Regional Representatives of O.D.H.W.S. Regional nutrition representatives have now been appointed in each of the Office of Defense Health and Welfare Services regions, which correspond to those of the Federal Security Agency. A complete list of the representatives, together with their addresses, appears in the *Nutrition News Letter* for September 1942.

Nutrition Reviews. The first number of this new publication, sponsored by The Nutrition Foundation, Inc., and edited by Dr. Frederick J. Stare, assistant professor of nutrition, Harvard University, presents, as the foreword states, "an authoritative, unbiased, editorially interpreted review of the world's current research progress in the science of nutrition." Obviously written by authorities in each field, these editorial reviews cover a rather wide range of interests, both in the field of straight research and the practical application of research findings.

Archives of Biochemistry. This is the title of a new publication, the first issue of which appeared in October. Clive M. McCay, Ph. D., Cornell University, has been appointed one of the members of the editorial board. Two volumes a year are planned, the cost of each to be $5.50.

Women—Guardians of Nation's Health. Under the foregoing title, Nelda Ross, 1941–42 president of the American Dietetic Association, wrote a featured article in the Philadelphia *Inquirer* for November 15. After a stimulating account of the activities of lay and professional women in the National Nutrition Program, Miss Ross salutes the volunteer assistant now serving in the dietary departments of hospitals. She says: "I know a woman in one hospital who spends six hours daily, five days per week, checking formulas, supervising maids, writing orders. In addition, she is taking a refresher course in nutrition. She happens to be a college woman more than fifty years old. I know another volunteer who assists three afternoons each week in clerical work formerly done by dietitians. Both women feel they are making a real contribution to the hospitals."

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Omission of Name of Author in Credit Line. Fairfax T. Proudfit, author of *Nutrition and Diet Therapy*, published by the Macmillan Company, writes that the name of the author, Bertha S. Burke, was inadvertently omitted from the credit line to a table taken from Mrs. Burke's article, "The Need for Better Nutrition During Pregnancy and Lactation," published in this JOURNAL for February 1941. The table in question appears on page 235 of the 8th edition of Miss Proudfit's text and it is understood that this oversight will be corrected in the next printing.

Omission of Credit Line. Lenna F. Cooper, senior author of *Nutrition in Health and Disease*, published by J. B. Lippincott and Company, writes that she and the junior authors of the book under question deeply regret the typographical error on page 355 of their last edition in which the prologue to the chapter was quoted without giving credit to the author, Bertha S. Burke, of a paper published in this JOURNAL for February 1941. Proper credit has been inserted in the current printing of the 8th edition of the book.

Correction. In the sample menu found on page 732 of the November JOURNAL the following correction is to be noted: In the dinner menu, the meat equivalent of four eggs should read 100 grams and in the supper menu, the meat equivalent of six eggs should read 150 grams.

Pauline Murrah Returns to Red Cross Work. On August 1 Miss Murrah was appointed Director, Nutrition Service, North Atlantic Area, American Red Cross, covering the New England States and New York, New Jersey, and Delaware.

Mary Phillips Receives New Appointment. Miss Phillips, formerly at Baker Sanatorium, Lumberton, North Carolina, is now at the Moore County Hospital, Pinehurst.

Jessie Alice Cline on Staff of National Live Stock and Meat Board. An announcement from this concern states that Miss Cline has accepted an appointment as director of their Department of Home Economics.

Lieut. Edna L. Cox Appointed Mess Officer. Lieut. Cox has been appointed mess officer at the Daytona Beach Waacs' Training Center. Her address is 210 South Ocean Avenue, Daytona Beach, Florida.

Dietitian Serving with Army Air Corps. In a letter to Dorothy Lenfest, Mrs. Bertha Cochran Hahn, a member of the American Dietetic Association who has been flying since 1934 and is now in the Civil Aeronautics Authority, writes about her work as follows: "I was sent to Cincinnati for about two weeks, then on to Chicago for three months' intensive training, and now I talk by radio to pilots bringing ships in to land at Louisville, or outbound to other points. The work is most interesting, and traffic is so heavy that it is really necessary to keep ships sorted out and I like the game of keeping the field clear and the ships on the way to the places they want to visit."

Bread in Illinois State Institutions. A report submitted by Christine R. Pensinger, chief home economist for the State of Illinois, declares that the 21 state welfare institutions consumed 9,130,000 lb. of bread enriched with vitamin B_1 during the fiscal year 1941–42. Most of the institutions make their own bread, only three purchasing their entire supply on the open market. All of the larger institutions are equipped with automatic bread slicers and wrappers, thus saving as much as $300 per month due to the exactitude of the measured slice. The bread is wrapped in oil paper in semi-automatic wrapping machines. Seventy-five per cent of the bread made in the Army Cooks and Bakers School in Chicago is "field bread," *i.e.* 4-lb. loaves capable of remaining fresh for from 14 to 21 days. Cooperating with the Army in this training of bakers, the State of Illinois purchases their entire output of bread, 300 lb. per day, which is distributed to the Chicago and Manteno State Hospitals.

Connecticut Dietetic Association. The fall meeting was held at the Y.W.C.A., New Haven, November 17, with the following program: "Reports of the Annual Meeting of the American Dietetic Association," Gladys Hills, Margaret Kennedy and Dorothea Behm; and "Problems in Industrial Feeding," Josephine O'Leary and Estelle Keane.

Lois Dorr, director of nutrition, American Red Cross, New Haven, reports that over 400 persons are enrolled in nutrition courses or are on the waiting list. Two classes for men are being held at the New Haven Dairy Company.

Amy B. Conwell has been appointed director of the Dietary Department of Grace Hospital, New Haven. Her assistants are June Hall, Margaret Woods, Amelita DeLonardo, Sue Hinsdale, Ruth Ogden and Louise Fudala.

Sally Brightman, formerly assistant dietitian at Meriden Hospital, is now in the Army, stationed at a base hospital in the West. Helen Park and Eleanor Turner, formerly at Bridgeport Hospital, are now at Camp Edwards and Fort Bragg, respectively.

Other recent appointments include: Lois Dorr, to New Haven Chapter, and Mrs. Arthur Uman, to Hartford Chapter, American Red Cross; Dorothy Ronto, to Colt Patent Firearms Manufacturing Company, Hartford; Josephine O'Leary, to Pratt & Whitney Aircraft, East Hartford; Estelle Keane, to Remington Arms, Bridgeport; Eileen O'Keefe, to Waterbury Hospital; Katherine McAulliffe, to St. Joseph's Hospital, West Hartford; and Stella R. Maisner, to New Britain General Hospital.

Recent marriages include that of Corinne Keeton, formerly at Edgewood School, Greenwich, to Dr. Glenn W. Phillips, Meadville, Pennsylvania; Eileen Neilan, formerly at St. Joseph's College, to Mr. Frank Byrnes; and Eleanor Turner, stationed at Fort Bragg, to Dr. William Donnelly, also stationed at Fort Bragg.

Bridgeport Hospital reports receiving assistance from members of the Red Cross Canteen Corps, who work from 10 a.m. to 3 p.m., helping with food preparation in the kitchen and food service in the cafeteria.

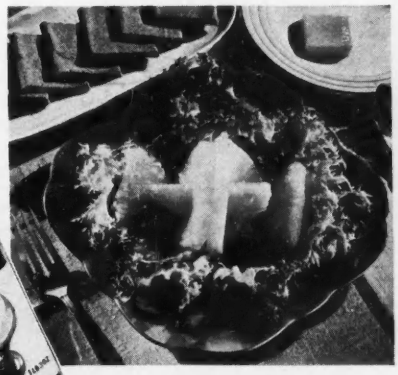
Illinois Dietetic Association. The following officers were elected for 1943: president, Margaret Cowden, Michael Reese Hospital; president-elect, Lida Jamieson, Chicago Dietetic Supply House; vice-president, Madge Limes, Wesley Memorial Hospital; secretary, Dorothea F. Turner, University of Chicago Clinics; treasurer, Eunice Baker, Methodist Hospital, Peoria. Section chairmen include Mary McKittrick, Mercy Hospital; Mary Ellen Dambold; Mrs. Helen Boome, Douglas Smith Memorial Fund; and Jeanette Owens, assistant to Dr. Grant Lang.

Chicago Dietetic Association elected the following officers: president, Alice Klinger, Michael Reese Hospital; vice-president, Mae Witmer, Cook County Hospital; secretary, Mary Jane Stringer, Mercy Hospital; and treasurer, Mrs. George Barry, University of Illinois.

Recent civilian appointments include the following: Bertha Kahn, Michael Reese Hospital, to the Chicago Welfare Administration; Vivian Leppert, Michael Reese Hospital, to Illinois Institute of Technology as cafeteria manager; Geraldine O'Farrell and Marie Higgins, to Research and Educational Hospitals, University of Chicago.

Army appointments are: Aileen Farrell, Chicago Unit, Presbyterian Hospital; Mrs. Nell Newton Hemingson and Loretta Loker, Presbyterian Unit; Florence Nusbaum and Mary Remington, Cook County Hospital Unit.

Recent marriages include that of Polly Estill to Captain



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Joseph Burke. Captain and Mrs. Burke are living in Spartanburg, North Carolina.

Maryland Dietetic Association. The October meeting, held at the University of Maryland Hospital, was conducted by members of the Administration Section. The speaker, Mr. F. H. Longfellow, president of the Restaurant Association of Maryland, discussed "Food Service and Control."

On October 10 a group of association members attended a "Friendship Dinner" sponsored by the Business and Professional Women's Council. A skit entitled "Food Morning, Dietary Department," written by Mrs. Felissa Jenkins Bracken, Helen Schmit, Eleanor Wilkinson and Alice E. Jané, was presented by Eleanor Wilkinson, Elva Tatman, Virginia Sterrett and Red Cross canteen workers.

The November meeting was conducted by the Community Education Section under the chairmanship of Mrs. Alice Lambert. Interesting films which are available for teaching nutrition were shown. Helen Baughman, national delegate, reported on the highlights of the convention.

The Student Dietitian Training Course at the University of Maryland was approved by the Executive Board, American Dietetic Association, during the Detroit meeting.

Recent appointments include the following: Marguerite Betts, Maryland College for Women, Lutherville, to Kernan Hospital for Crippled Children, Baltimore, Mrs. Ruth Zink Davidson replacing Miss Betts at Maryland College; Irma Lee, University of Indiana Hospital, to Women's Hospital, Baltimore; Margaret Blakey, member of the dietary staff of the Medical Center, Richmond, Virginia, and Frances Buckler and Beverly Baer, graduates of the student dietitian training course, University Hospital, Ann Arbor, now on the dietary staff of the University of Maryland Hospital. Mrs. Charles O. Bracken (Felicia Jenkins) formerly at University Hospital, is now associated with Mrs. Ethel Gardner, home economist for the Department of Public Welfare, Baltimore.

New students at the University of Maryland Hospital include: Mae Burt, Rhode Island State College; Elizabeth Funk, University of Maryland; Anna Margaret Long, Madison College; Mary Triplett, William and Mary College; and Jeanne Weiss, New Jersey College for Women.

Recent marriage announcements include: Frances Tuttle to Mr. Casbarian, registrar at the University of Maryland; Anne Lyddane, Women's Hospital, Baltimore, to Dr. Frank Campo, Salisbury, Maryland; and Ruth Haglund, formerly student dietitian at Johns Hopkins Hospital, to Mr. Clifford Orton, Brockway, Montana. Dorothy Pierce Shutak has resigned her position at Hamilton Junior High School to join her husband who is with the armed forces in Colorado. Mrs. Roy Corzine (Nancy Hedrick) who has been relieving at Johns Hopkins Hospital for the last three months, has left to join her husband at Camp Breckinridge, Kentucky.

Frances Stern of the Boston Dispensary was a recent visitor at Johns Hopkins Hospital.

New Jersey Dietetic Association held its tenth anniversary meeting at the New Jersey College for Women, November 19. The business meeting and reports of officers, section chairmen, committee chairmen and national delegate to the Detroit meeting were followed by election of the following officers: president-elect, Irma Donnelly, Glen Gardner Sanatorium; vice-president, Dolores Garrett, Jersey City Medical Center; and secretary, Elizabeth McHugh, Orange Memorial Hospital.

The theme of the program was "A Decade of Professional Progress," which included discussions of the part played by dietitians in the nation, by Mary I. Barber; in the American Dietetic Association, by Louise Stephenson; in New Jersey, by Winifred Cushing, Geraldine Parry, Harriet Stone, Veronica Mollek, Sophia Morris, and Asta Low Packard. Other speakers and their subjects included: Helen W. Hazen, "Our Professional Job Ahead"; Dean Margaret Trumbull Corwin, "A Decade in College History"; and Dr. Frank G. Boudreau, "Nutrition and the War."

Honorary memberships in the state association were conferred on Marie Doermann, nutrition specialist, Home Extension Service, Rutgers University, and Ruth Dakin, R.N., former educational adviser, and inspector, New Jersey State Board of Nursing.

Recent appointments include: Eleanor Butcher, to Trenton State Hospital, replacing Margaret Neubert; and Geraldine Parry, formerly at Hackensack Hospital, to Fredericksburg General Hospital, Virginia.

New York State Dietetic Association. The Buffalo Dietetic Association met jointly with the Buffalo Home Economics Association, October 8, at the Iroquois Gas Company. Speakers included J. Ernestine Becker, John Hopkins University, "Nutrition as Applied to the Home"; and Dr. Elmer Alpert, Assistant Technical Director of Industrial Nutrition, Washington, D. C., "Nutrition in Industry."

The Albany Dietetic Association has elected the following officers: president, Ruth Johnson; vice-president, Helen Hafner; secretary, Hazel Goure; treasurer, Hazel Meyer.

Officers of the Syracuse Dietetic Association are: president, Marie Mahlerwein; vice-president, Cora La Munkon; secretary, Evelyn Cox; treasurer, Grace Humphrey.

Lucy Townsend has resigned her position with the Slocum-Dickson Clinic, Utica, to join the Syracuse Medical Unit for Army service abroad. Marguerite Klobe and Jean Wirt, formerly at Buffalo General Hospital, and Pauline Emerson, Strong Memorial Hospital, Rochester, are now with Base Hospital No. 23 at Ft. Meade. Rosanna Chad, formerly student dietitian at Millard Fillmore Hospital, Buffalo, has joined the Waacs. Alta Atkinson, formerly of Hunter College and New York Hospital, has been appointed assistant professor of institution management at Teachers College, Columbia University.

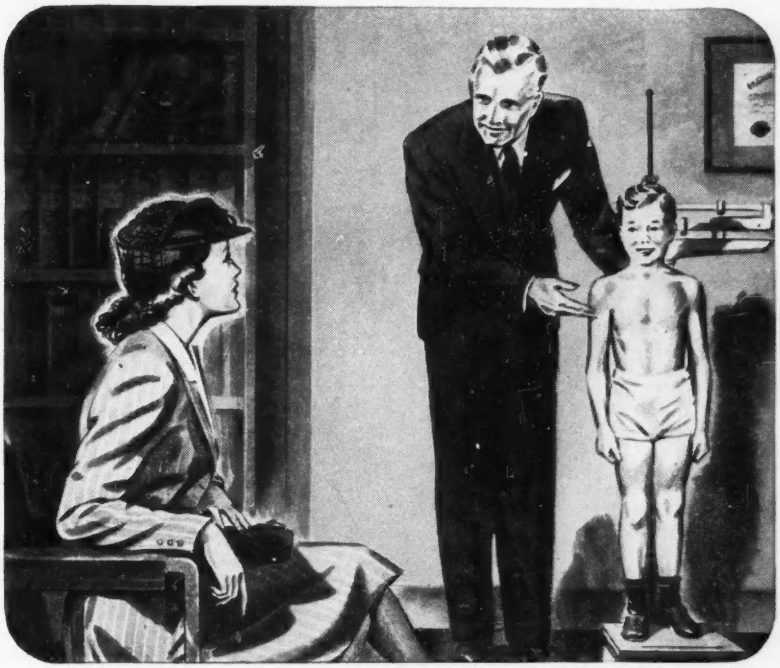
With the summer and autumn numbers of the *Bulletin* of the New York State Dietetic Association, Hendricka Rynbergen, New York Hospital, assumed the position of editor, replacing Eleanora Sense.

Oklahoma City Dietetic Association. Officers for 1942–43 are: president, Eloise Argo, University Hospitals; vice-president, Arlene Gonella, Wesley Hospital; and secretary-treasurer, Marceline Moran, St. Anthony's Hospital.

During the week of October 20, the Dietary Department of St. Anthony's Hospital planned a "two-bits" meal which was publicized in an Oklahoma City daily paper. Dietitians of the city are assisting the Oklahoma City-County Nutrition Committee under the Welfare and Consumer Interest Committee of the Civilian Defense Program. Their contribution is the assembling of materials to be used in the nutrition program and the distribution of nutrition books and pamphlets.

On October 10, Mrs. Dry, director of home service, American Red Cross, Oklahoma City, addressed the students of the training course for dietitians, University Hospitals, concerning their responsibilities in nutrition instruction for families in the lower income group.

Pennsylvania Dietetic Association. The Department of Rehabilitation, Bureau of Public Assistance, has asked the Community Nutrition Section of the Philadelphia Dietetic Association to act as an advisory committee for budgetary allotments related to food. Recent appointments in the association include: Margaretta Schonbecker,



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ANSWER: Yes, either fresh or canned citrus fruit and tomato products may be used to take care of the recommendations of 3 to 7 generous servings per week of these fruits. The liberal use of these foods is based primarily upon their high ascorbic acid contents. By use of modern commercial canning methods, these fruit products are permanently sealed in cans under conditions very favorable for the retention of ascorbic acid content (vitamin C activity). Hence, the nutritive values of fresh or canned citrus fruits and tomatoes are essentially equal (1).

American Can Company, 230 Park Avenue, New York, N. Y.

(1) 1939, Food and Life; Yearbook of Agriculture U. S. Dept. Agriculture, U. S. Gov't. Printing Office, Washington, D. C.
1938, J. Am. Med. Assn. 110, 650.
1940, J. Am. Dietet. Assn. 16, 891

The Seal of Acceptance denotes that the nutritional statements in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

Osteopathic Hospital, to Swarthmore School District; Susan B. Merrow, Children's Hospital, now at Hyde Park, Massachusetts; and Betty Lou Mohan, graduate of the student training course, Jewish Hospital, to Youngstown General Hospital, Ohio. Dietitians in Army service are Martha Tarbox, Loval General Hospital, Fort Bevins, Massachusetts; and Virginia M. Bounds, Fort DuPont, Delaware. Announcement has been received of the marriage of Sylvia Wade to Mr. Robert H. Bixler, Chief Petty Officer, Submarine Corps.

Officers of the Pittsburgh Dietetic Association for 1942–43 are: president, Ruth Silvester, Allegheny General Hospital; vice-president, Ruth Kennedy McCollough, Pittsburgh Dairy Council; and treasurer, Frances Swenson, Magee Hospital.

The Red Cross Canteen Unit of Harrisburg, with Mrs. E. B. Page, relief dietitian at Harrisburg Hospital, as chairman, has been of great assistance to the dietary departments of the two Harrisburg hospitals. During one month the members have totaled 1017 hours of work. There have been 20 classes with 600 graduates, 193 of which will give 150 hours a year in active duty in hospitals and other places where their help is needed. Margaret Osborn, Harrisburg Hospital, has accepted an appointment at George Washington University where she will instruct Navy nurses to act as dietitians in Navy Hospitals. Alice Grist, formerly at State College, will replace Miss Osborn at Harrisburg Hospital.

At a meeting of the Northeastern Pennsylvania Dietetic Association, held at Rocky Glen, the following officers were elected for 1943: president, Sophia Podgorski, Nesbitt Memorial Hospital, Kingston; vice-president, Thelma Sumner, Wyoming Valley Memorial Hospital, Wilkes-Barre; secretary, Helen Loughran, S. & S. Memorial School, Wilkes-Barre; and treasurer, Kathleen Dougherty, G.A.R. High School, Wilkes-Barre. Marian Coxe, past-president of the association, and former dietitian at St. Mary's Mater Misericordia Hospital, Scranton, is now in Army service at Indiantown Gap. Helen Tremback, formerly at West Side Hospital, is now a member of the Waacs. Recent marriages include: Catherine Regan, South Side Junior High School, to Mr. James Bowen; and Mary Lally, formerly at Mid-Valley Hospital, Peckville, to Mr. William F. McGowan who is serving in the Army. New appointments include: Margaret O'Connor, to Mid-Valley Hospital, Peckville; Ann Loretta McNulty, Bellevue Hospital, New York, to Pittston Hospital, replacing Mrs. Florence Mulherin Holleran; Marie O'Hara, Hahnemann Hospital, to St. Barnabas Hospital, Newark, New Jersey; Mollie Crossin, Jefferson Hospital, Philadelphia, to West Side Hospital, Scranton.

On September 8–9 Mrs. Anna dePlanter Bowes, chief of the Department of Nutrition, Pennsylvania Department of Health, conducted a refresher course in nutrition for dietitians and home economists, sponsored by the Lackawanna County Nutrition Council and the Visiting Nurse Association.

Lehigh Valley Dietetic Association has elected the following officers: president, Josephine Zekus, Sacred Heart Hospital, Allentown; vice-president, Mary Sue Lear, Easton Hospital; secretary, Ruth Dull, Easton; treasurer, Eva Zuck, Easton. Graduates of canteen classes in Allentown and Easton have been serving lunches to the Army Blood Donor Units of the American Red Cross. The Palmerton Canteen Corps had practical experience in disaster feeding when they served flood victims at Weissport. Recent appointments include: Mrs. Edith Butler, Easton High School Cafeteria, to Warren Hospital, Phillipsburg, New Jersey, replacing Mary Kelley, now at Easton Hospital; Mrs. William Frigard, demonstrator for Boston Power and Light, to St. Luke's Hospital, Bethlehem; Ruth E. Kincaid, graduate of Drexel training course, to Allentown Hospital.

South Caroline Dietetic Association. The sixth annual convention of the association was held jointly with the state home economics association in Columbia November 20–21. The program included: Dr. Helen S. Mitchell, "The Dietitian as an Integral Part of the National Nutrition Program"; Ruth Chambers, National Live Stock and Meat Board, "The Dietitian Copes with the Problems of Meat Shortage"; Myra Reagan, regional director, Office of Defense Health and Welfare Services, "What the South Has Accomplished in the National Nutrition Program"; Jane Ketchen, Winthrop College, "The Consumer's Problems in the Meat Situation"; and Elizabeth Watson, "The Textile Situation Today."

Violet Fields, Tri-County Hospital, and Nell Moore, Columbia Hospital, are now serving as Army dietitians.

Utah Dietetic Association. The October meeting was held at Latter-Day Saints Hospital with the following officers present: president, Margaret Doidge, Utah Valley Hospital, Provo; vice-president, Katharine Bielby, Latter-Day Saints Hospital, Salt Lake City; treasurer, Mabel G. Johnsrud, St. Mark's Hospital, Salt Lake City; and secretary, Emma Chapman, Veterans Hospital, Salt Lake City.

Mrs. Ruth Clayton Kearns is now stationed at Fort Douglas. Marjorie McKinlay, formerly at Corwin Hospital, Pueblo, Colorado, is now at Salt Lake General Hospital. New staff members at Latter-Day Saints Hospital include the following: Virginia Hagenson, recent graduate of the hospital training course; Ramona Strong, graduate of Alameda County training course; and Sybil Christensen, formerly at St. Mary's Hospital, Rochester, Minnesota.

Mr. and Mrs. C. B. Quinn (Evelyn Bushey) announce the birth of a daughter.

Wisconsin Dietetic Association. The annual convention of the Wisconsin Dietetic Association was held November 13–14 in Milwaukee. Ada Lothe, Milwaukee County Institutions, and honorary president of the association, gave the address of welcome. Other speakers included: Dr. Hilda Taba, University of Chicago, "Evaluation of Teaching"; Dr. Van R. Potter, University of Wisconsin, "Respiratory Vitamins"; Frances MacKinnon, President of the American Dietetic Association, and Katherine Helzer, Des Moines, Iowa, discussed the place of the Red Cross and federal surplus commodities in the national picture; and Will Foster, vice-president, Borden Company, discussed "How to Persuade People to Follow the Principles of Good Nutrition." Workshops of the various sections were presided over by Dr. Helen Parsons, Mrs. B. L. Griem, Hedwig Poehler, Susan West, and Ruth Henderson. Gladys Hall, educational director, American Dietetic Association, presided at one of the sessions.

Officers of the association for 1942–43 are: president, Mrs. Sarah Merritt Wenger, Wisconsin Alumni Research Foundation; president-elect, Susan West, Milwaukee-Downer College; secretary, Marie Bergin, Milwaukee County Institutions; and treasurer, Mrs. Magna Werra Schley, Milwaukee Children's Hospital.

News from our Advertisers and Exhibitors. The *Wisconsin Alumni Research Foundation* has published a brochure, intended for those interested in "selling" between-meal milk lunches for industrial workers, which shows by means of pictures and statistics the advantages of extra nourishment for workers. An attractive, well-illustrated format is used, and quotations from this JOURNAL and other periodicals, on the subjects of the effect of between-meal feeding on decrease in errors, accidents, absences, etc. are included, and should help to convince production managers of the economic advantages of

We Make Roasting and Baking Ovens.
We Have Made Them for 95 Years.
So Perhaps We are Prejudiced. BUT

NUTRITIONAL EXPERTS TELL US: "OVEN-COOKED FOODS ARE BETTER"

Here are some of the reasons they offer:

- Shrinkage and spoilage are minimized.
- Nutritional values are retained.
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We Believe Ours are Better Ovens.
We Try to Make Them That Way—
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THE G. S. BLODGETT CO., INC.
53 Maple St., Burlington, Vt.

Sunfilled

PURE CONCENTRATED

ORANGE AND GRAPEFRUIT JUICES

...a war-time conservation measure, too!

Overburdened transportation facilities have already resulted in shortages of consumer supplies . . . higher prices. Aside from a lowered cost per serving, one case of Sunfilled No. 5 hermetically sealed containers is the equivalent in juice potential and shipping or storage space of 13 crates of fresh oranges. An adequate supply of Sunfilled may well be regarded as a far-sighted means of insuring wholesome, nutritive citrus fruit juices for the duration.

Shortage of labor presents an acute problem as well. In this regard, any desired quantity of Sunfilled juice may be quickly prepared by a single attendant. No inspection, cutting, reaming of fruit or crate handling is necessary.

—YET—Sunfilled products, when returned to ready-to-serve form by the simple addition of water as directed, consistently approximate the flavor, body, nutritive values and vitamin C content of freshly squeezed juice of high quality fruit.

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this practice. Copies are available to dietitians connected with industrial plants. Another useful publication of the Foundation is a "personal nutrition check-up chart" compiled by Mrs. S. M. Wenger, Director of Education, which provides a means of determining the caloric, mineral, and vitamin values of foods eaten for one day. Values for all common foods are listed above the chart, based on various authorities. On the back are listed the "recommended allowances" and full directions for use of the chart. Sample copies are free to teachers, dietitians, nutrition workers, and lunchroom managers. Copies for students are 3 cents each.

A publication of the *Borden Company*, New York, directed to the profession of nutrition and dietetics, and entitled "Borden's Review of Nutrition Research," is a carefully edited monthly which gives reports of the latest research concerning the nutritive values of milk and milk products, as well as a news digest of other developments in the food field. The October issue has an article entitled "Labile Methyl Groups of Protein and Choline—A Newly Recognized Nutritional Essential" with an imposing list of literature citations. Good food sources of labile methyl groups supplied by methionine, choline, or casein are listed, and functions of methionine, choline, and related compounds with active methyl groups. Among the notes in the "News Digest" section are some facts about dehydrated beef and a quotation from a report by W. V. Cruess *et al.* concerning new dehydrated food specialties, in which it is stated that 11 lb. vegetables can be reduced to 1 lb. vegetable flakes, 3 doz. shell eggs to 1 lb. dried eggs, and 25 cases of oranges to 1 small case of concentrate. It is stated in the publication that further information about any of the items may be obtained by addressing the Editor, Borden's Review of Nutrition Research, 350 Madison Avenue, New York City, from whom, presumably, copies of the publication itself may also be obtained.

Mead Johnson & Co., Evansville, Indiana, writes as follows: "Oleum Percomorphum 50% is now known as Oleum Percomorphum 50% With Viosterol. The potency remains the same; namely, 60,000 I.U. vitamin A and 8500 I.U. vitamin D per gram. It consists of the liver oils of percomorph fishes, viosterol, and fish liver oils, a source of vitamins A and D in which not less than 50% of the vitamin content is derived from the liver oils of percomorph fishes (principally Xiphias gladius, Pneumatophorus diego, Thunnus thynnus, Stereolepis gigas, and closely allied species)."

H. J. Heinz Company, Pittsburgh, has for distribution copies of the eleventh edition of "Heinz Nutritional Charts" prepared expressly for medical, dental and dietetic specialists by the research department of this company. For those not familiar with this publication it might be mentioned that the content includes charts and tables covering requirements of a normal diet, plans for meeting such requirements, data regarding all the known vitamin composition of fruits and vegetables, meats, fish and poultry, and detailed information concerning cereals and baby foods. Those interested may obtain free copies of this publication upon request.

A booklet entitled "Defense of Health with Economy Meats," published by *Armour and Company*, Chicago, has been prepared by Marie Gifford, Director of Food Economics. While the schedule of prices, as of October 1941, will be of little value (a week's meat budget selected at random which totaled $4.53 at present-day prices in the East on November 20 showed an increase of at least $1.05), likewise the meat allowances per person per week, as quoted from the U.S. Bureau of Home Economics' "Planning Diets by the Yardstick of Good Nutrition" (boys, 13 to 15 years, 2 lb. 12 oz. to 3 lb. 12 oz.; very active women, 3 to 4 lb.; very active men, 4 lb. 12 oz.), the "tips on saving the meat dollar" are very much in order. There is a complete list of the cheaper cuts of meat (although even these may be of doubtful value if meat rationing allowances are on the basis of "bone in" and "fat on"), and there are many usual and unusual family-size recipes for dishes using cheaper cuts, and, more important, for "meat extender" dishes.

"Quantity Recipes for Camps," adaptable to school, club and community group menus, published by *National Biscuit Company*, 449 West 14 Street, New York, contains a group of quantity recipes using whole grain flour or cereal as an ingredient, including blueberry breakfast cake, refrigerator rolls, wheat nut bread, "Wheatsworth" berry cobbler, and chocolate wheat cookies, as well as other dishes using prepared cracker crumbs.

An announcement by the *Hawaiian Pineapple Company* states that in spite of problems arising from war conditions, the growing and packing of Dole pineapple products are being maintained. The government is requesting from the pack of 1942 approximately one out of every three cans of pineapple and about one out of every four cans of pineapple juice for the armed forces. The company will make every endeavor to distribute the balance for home consumption in all parts of the country. Suggestions for making Hawaiian pineapple products "go farther" include fruit cups, salads, meat and vegetable dishes, and desserts.

In view of the price of butter and the prospect of its rationing, the folder entitled "Cut Butter Bills with Knox Spread" available from *Charles B. Knox Gelatine Co. Inc.*, Johnstown, New York, is especially timely. It details the method of making "Knox Spread" in which 1 lb. butter with added gelatine and evaporated milk will make 2 lb. of "Spread." The folder includes several recipes for sandwich fillings and "toast toppers." In line with the nutrition education program a large poster entitled "Gear Your Diet to Body Needs" is also available. This graphically portrays the meaning of the phrase "Make Every Food a Cog" and shows how Knox Gelatine may be combined pleasingly with the foods essential in the daily dietary.

"Informative Advertisements" is the apt title of a collection of sample advertisements in booklet form prepared by *Kraft Cheese Company*, Chicago, most of which are familiar to the readers of this JOURNAL. Teachers of nutrition classes should find this booklet of assistance in discussing consumer problems as these relate to advertising. Another booklet published by the same company entitled, "The Romance of Cheese," will also interest teachers and serve to introduce the many excellent types of domestic cheese now available. With meat rationing and butter shortages upon us, this booklet and several other folders pointing out the many uses of Parkay oleomargarine, Miracle Whip salad dressings and various cheeses will be of great help in menu planning.

Mr. T. S. Blair of *The J. B. Ford Sales Co.* writes calling attention to an editorial in the *Wyandotte Wigwam*, house organ of the company, in which a bit of philosophy accredited to General Knudsen, "Stuff cotton in your ears and go right on working," is a timely thought for jittery or procrastinating and gossipy persons in these distracting war days.